AMERICAN GAS JOURNAL

88th YEAR | JUNE 1946 | VOL. 164 NO. 6

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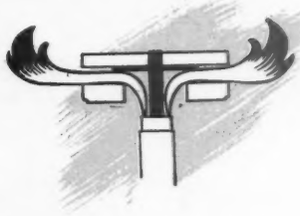

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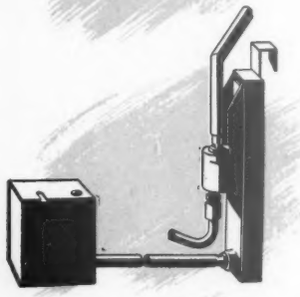

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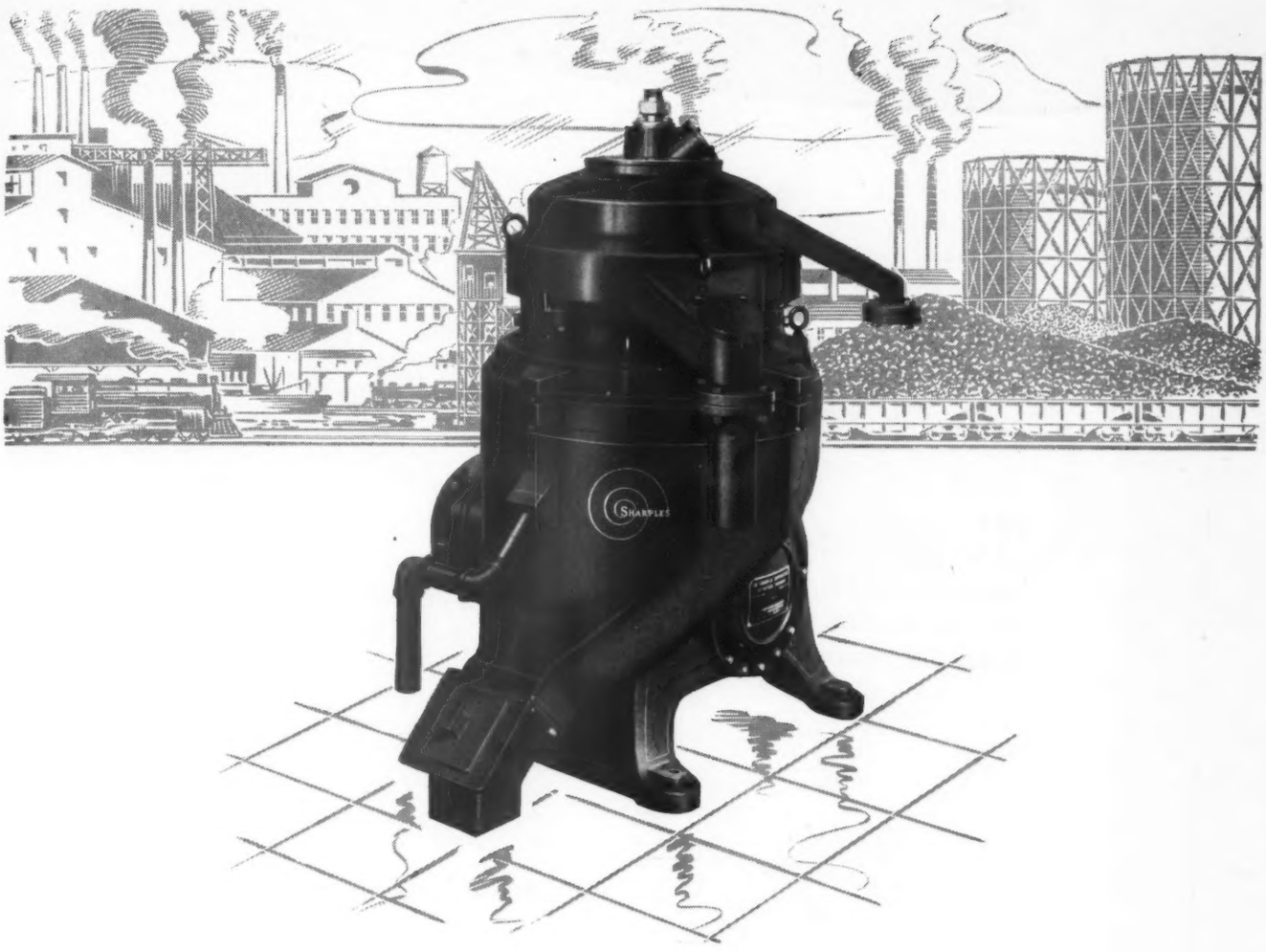

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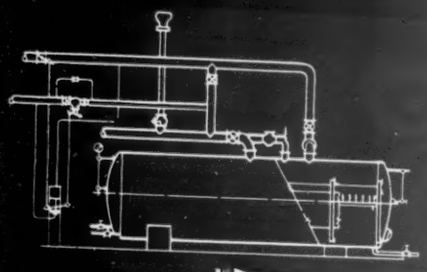

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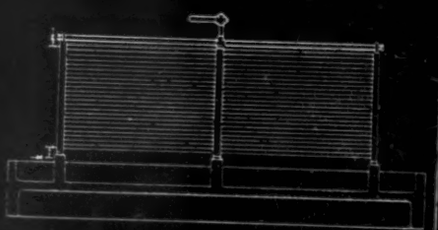

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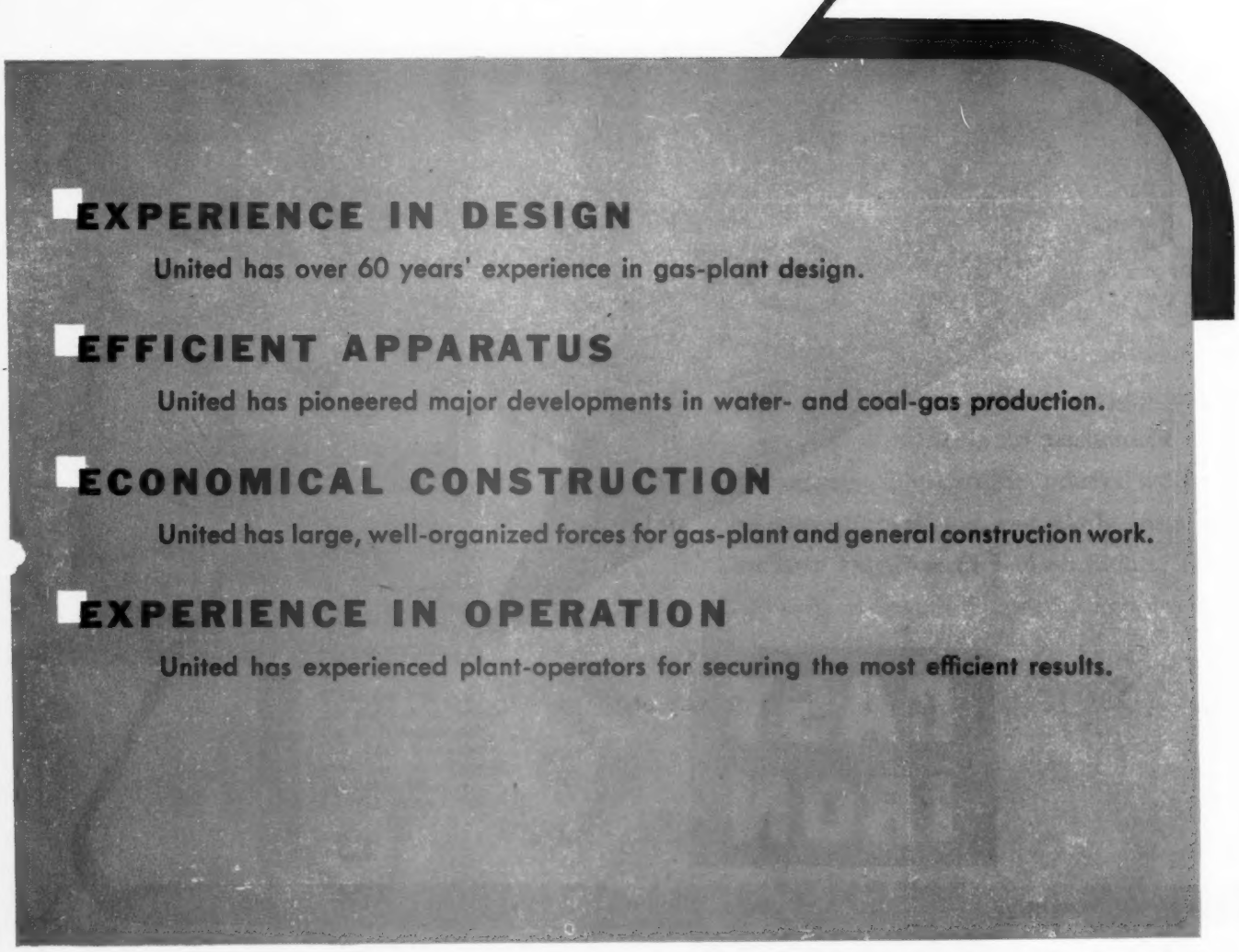

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S. G. KRAKE, *President and Treasurer*

M. E. KELLEHER, *Secretary*

S. G. KRAKE, *Managing Editor*

H. T. MATTHEW, *Business Manager*

JAMES C. MUNN, *Midwest Representative*
10515 Wilbur Ave., Cleveland 6, Ohio
Tel. Sweetbrier 0052

SCOTT KINGWILL, *Western Representative*
35 E. Wacker Drive, Chicago 1, Ill.
Tel. State 4227

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JUNE 1946

AMERICAN GAS JOURNAL

VOLUME 164 No. 6

Gasoline from Natural Gas

The development of the Hydrocol plant to convert natural gas to gasoline and the effect of new processes on the national fuel economy

By P. C. Keith

President, Hydrocarbon Research, Inc. New York, N. Y.

CONSIDERABLE interest has been exhibited of late in the possibility of developing a process for making gasoline from natural gas at a cost competitive with the cost of gasoline from crude oil. Such a process would make natural gas this country's first important source of motor fuel independent of petroleum. The need for a substitute oil source grows steadily as withdrawals from our crude oil reserves continue to exceed the rate of discovery of new deposits. The situation was of course aggravated by World War II, but it promises to remain a point of real concern in the postwar period. Just how long it will be before we face a really serious crude oil shortage is a matter of conjecture, but this much is certain: our oil reserves are dwindling.

The proven reserves of natural gas, on the other hand, have increased materially in recent years, and the indications are that this trend will continue. In fact, the present production rate is only half the rate of discovery. If the production rate were doubled, thereby approximating the rate of discovery, and if this incremental production were converted to gasoline and oil, motor fuel production would be stepped up by 25%. Given a satisfactory natural-gas-to-gasoline process, then, it is evident that natural gas could become an important factor in the country's oil economy.

Furthermore, the manufacture of gasoline from coal is only one step removed from the manufacture of gasoline from natural gas. With our huge coal reserves, an economic coal-to-gasoline process would have the effect of underwriting this country's gasoline and oil requirements for centuries to come.

Hydrocarbon Research, Inc., has developed an economic natural-gas-to-gasoline process. Known as the Hydrocol Process, it consists of the conversion of natural gas to a mixture of carbon monoxide and hydrogen, followed by catalytic reaction to produce liquid hydrocarbons boiling substantially within the range of gasoline. By-products are high-grade diesel oil and oxygenated compounds such as alcohols.

The Hydrocol Plant

The first commercial application of Hydrocol Process is to be made by Carthage Hydrocol, Inc., in a plant soon to be erected at Brownsville, Texas. This plant, to be engineered by Hydrocarbon Research, Inc., has been designed to process approximately 64,000,000 cubic feet of natural gas per operating day and to produce the following:

Motor Fuel	5,800 barrels per day
Synthetic Diesel Oil	1,200 barrels per day
Crude Alcohols (in water solution)	150,000 pounds per day

The finished gasoline produced by Hydrocal with a Reid vapor pressure of 10 pounds has a clear octane number of 80 CFRM or 88-90 CFRR. This quality of gasoline compares favorably with that produced by catalytic cracking of distillate fractions from petroleum. The diesel oil has a gravity of about 38° A.P.I., a cetane number of 45-50, and a pour point below 0° F. The oxygenated compounds in water solution consist mainly of acetaldehyde, acetone, and ethyl, propyl, butyl, amyl and heavier alcohols. This last product offers an extremely attractive source of chemical raw materials.

The Hydrocol Process calls for the following operations:

(1) The recovery of approximately 0.25 gallons of natural gasoline and butane per 1000 cubic feet of feed gas. (Recovery of this natural product becomes economical only as an incremental operation of the Hydrocol Process.)

(2) The separation of 40,000,000 cubic feet per day of high purity oxygen from air.

(3) The partial combustion of 64,000,000 cubic feet per day of natural gas with the high purity oxygen to produce a mixture of carbon monoxide and hydrogen.

(4) The conversion of this mixture of carbon monoxide and hydrogen—called Hydrocol gas—into gasoline and other synthetic products.

(5) The separation of the gasoline and other synthetic products by fractionation and absorption techniques.

(6) Treatment of the gasoline to remove oxygenated compounds, polymerization of the propylene and butylene, rerunning, blending, etc.

(7) The manufacture and revivification of catalysts.

The Carthage Hydrocol plant is scheduled to be in operation late in 1947 and will cost an estimated $15,000,000. Allowing credit for the diesel oil at 3½ cents per gallon and for the crude alcohols at ½ cent per pound, it is predicted that the "out-of-pocket" cost of the gasoline will run about 2½ cents per gallon. This cost includes all expenses and charges exclusive of capital costs. When capital costs, including interest, depreciation and amortization, are added, the cost of the gasoline becomes 5.25 cents per gallon. This figure compares favorably with figures for producing gasoline of similar quality from crude oil at today's crude prices. Discounting any advantages which would result from a probable increase in the price of crude, it is obvious that the most fruitful avenue for improvement in the economics of the process is in the reduction of capital cost. Substantial reductions in the cost of future Hydrocol plants seem probable.

History of the Process

With this picture of the projected plant in mind, it is interesting to review the history of the process. Twenty-five years ago, two Germans, Franz Fischer and Hans Tropsch, discovered a process for the synthesis of gasoline and oil from "water-gas"—i.e., a mixture of carbon monoxide and hydrogen prepared by blasting incandescent coke with steam. This so-called Fischer-Tropsch method was developed to the point of commercialization under government subsidy in that country about ten years ago. While it would have been uneconomic in the United States, it received favor in middle Europe due to the almost complete lack of petroleum and to the resulting artificial economy.

American engineers first became seriously interested in synthetic gasoline shortly before the recent war. A survey of the German work led to the conclusion that the Fischer-Tropsch installations, while highly developed from a chemical standpoint, were basically lacking in engineering design. It appeared that the application of modern chemical engineering practice, as typified by the process installations of the petroleum industry in this country, might very well make it possible to build a plant which would hold its own in an open market.

In reviewing the history of synthetic gasoline, it is convenient to treat separately (1) the manufacture of the carbon monoxide and hydrogen mixture, and (2) the reaction of this mixture to produce gasoline and other hydrocarbons.

Hydrocol Gas

The manufacture of carbon monoxide and hydrogen mixtures by the "water-gas" reaction is an old and familiar process. It will be recognized immediately as the basis for the production of "city gas." The first commercial Fischer-Tropsch plant in Germany, built by Ruhrchemie A.G., made use of this reaction to produce the necessary ingredients for synthetic gasoline. Prior to this application, however, I. G. Farbenindustrie A.G. had had occasion to produce mixtures of carbon monoxide and hydrogen, at first for the manufacture of ammonia and later for the manufacture of methanol and synthetic oil. Since I. G. did not have access to sufficient reserves of coking coal, they were forced to adapt the process to "Braunkohle," a superior species of peat slightly lower in rank than bituminous coal. Consequently, they developed a method for producing suitable carbon monoxide-hydrogen mixtures by burning Braunkohle with steam and oxygen. The I. G. process, as finally developed in the middle and late thirties, became a reality when a mechanically sound generator was designed and an economic method of producing oxygen was developed.

The generator, known to the trade as the "Winkler" generator, looks very much like a squat blast furnace. Into an opening in one side there is fed crushed Braunkohle. Through tuyeres around the periphery near the bottom a preheated mixture of oxygen and steam is introduced at high velocity. This gas mixture passes up through a grate, suspending the Braunkohle in the form of a "boiling bed" above the grate. It is interesting to note that this principle of suspending a powdered solid in a high velocity gas stream is also the basis of the fluid catalyst bed, a technique which is finding greater and greater application in petroleum refining and in the chemical industry as a whole. By burning the Braunkohle in the presence of oxygen and steam, temperatures up to 2500° F. are attained in the generator, with the result that the contained hydrocarbons are distilled and cracked, and essentially all the whole mass, except the moisture and ash, is converted to a mixture of carbon monoxide and hydrogen.

The oxygen, 98% pure, was produced by the Linde-Frankl process. This method involves compressing and liquefying air and then separating the oxygen from the nitrogen by fractionation. In the Linde-Frankl process, moisture or carbon dioxide is eliminated from the air mechanically rather than by chemical treatment. Much of the economy derives from the fact that upwards of 96% of the feed air needs only to be compressed to about 75 psi gauge. The plant is continuous and extremely simple in operation. In 1938, I.G. were producing millions of cubic feet per day of oxygen by this method.

With natural gas as the starting material in place of coal or Braunkohle, the natural gas can be converted either by direct burning in oxygen or by reaction with steam in an indirectly fired retort. The latter method is the familiar steam-methane process used in the synthetic ammonia and synthetic methanol processes. The steam-methane process requires a prohibitively high capital cost as well as an excessive consumption of methane. It was, in fact, the realization that cheap oxygen and direct burning of the natural gas afforded the only economic method of producing the carbon monoxide and hydrogen mixture required for synthesis that led Hydrocarbon Research to spend so much effort and money perfecting the oxygen plant and the direct combustion method.

In the Hydrocol plant to be erected at Brownsville, preheated natural gas and oxygen will be reacted at 250 pounds pressure in the generator to produce the carbon monoxide and hydrogen mixture known as Hydrocol gas. Experimentation at Olean, New York, in a 10-barrel per day semi-commercial plant, and on a larger scale at Montebello, California, has shown that the reaction goes smoothly and controllably. Operating at this pressure is advantageous because it eliminates the necessity for inserting a compressor station between the generator and the synthesis reactor. Since the natural gas will be available under pressure, the only requirement is to compress the oxygen prior to mixing it with the natural gas in the generator. Although the reaction takes place at relatively high temperature, the metal shell temperature can be maintained safely within accepted working limits by the proper selection of insulating materials and the introduction of vapor stops.

It is of interest that the oxygen unit of the Brownsville plant will be the largest ever built. Compressing air to 75 pounds, it will produce 40,000,000 cubic feet per day of oxygen at an estimated cost of 4.8 cents per 1000 cubic feet. This figure is based

on an investment of $3,500,000 for the plant (including construction labor, materials, etc.) amortization at 12½% per year, maintenance at 4% per annum, and two operators per shift. Power (amounting to less than 14 KW per 1000 cubic feet of oxygen) and water costs are excluded, since they are both available as by-products of the process and are automatically covered in the price paid for natural gas.

As will be developed later, this oxygen development should be of real interest to the gas industry since it promises not only to materially lessen the cost of making "city gas" but to open up the possibility of completely gasifying coal and producing therefrom a 1000 B.t.u. pipe line gas.

Synthesis Reaction

The catalytic reduction of carbon monoxide with hydrogen to produce hydrocarbons has been known since 1902 when Sabatier, the great French experimentalist, synthesized methane over cobalt and nickel catalysts at 400°-600° F. In 1912 the B.A.S.F. (Badische Anilin und Soda Fabrik, later I.G.) in Germany discovered that hydrocarbons higher than methane were formed in small amounts when carbon monoxide and hydrogen were reacted over an alkali-promoted iron catalyst at temperatures of 775°-850° F. and pressure of 100-150 atmospheres. However, the desired product of the reaction was Synthol, a mixture of alcohols, aldehydes, fatty acids, esters, and other oxygenated organic compounds. This led eventually to I.G.'s synthetic methanol process, but as late as 1921, they were reporting elimination of "objectionable" oil as one of their chief problems.

In 1923, Franz Fischer and Hans Tropsch discovered that the hydrocarbon yield could be greatly increased at the expense of Synthol by decreasing the pressure. In fact, at pressures less than 7 atmospheres, the product was mainly aliphatic hydrocarbons. This work formed the foundation for the Fischer-Tropsch process, which was responsible for the production of a large quantity of synthetic fuels in Germany during the recent war years.

Working under the auspices of the Ruhrchemie A.G., Fischer and his associates examined hundreds of catalysts and finally concluded that cobalt, nickel, iron and ruthenium constituted the most active metals and that thoria and the oxides of other rare earths were good promoters. It was further shown that the presence of some alkali was desirable and that kieselguhr was the best support or carrier of the active ingredients.

By 1933 the process was considered to be well enough developed to build a commercial unit. Accordingly, Ruhrchemie constructed a plant at Oberhausen-Holten with a rated capacity of 1000 metric tons per year (about 8000 42-gallon barrels) of motor fuel and lubricating oil. The first catalyst used was a nickel - manganese - aluminum oxide mixture on kieselguhr; this was later supplanted by a cobalt-thoriakieselguhr preparation. This plant, as the others which followed it, had many shortcomings which could be tolerated only under a structure supported by government subsidy. Among these were:

(1) The initial cost of the catalyst was high and reworking was expensive.

(2) The catalyst was extremely sensitive and had to be broken in very slowly according to a rigorous schedule.

(3) The catalyst was rapidly poisoned by small traces of sulfur.

(4) Catalyst life was limited to 6-8 weeks, due in part to accumulation of high melting point waxes on the surface.

(5) Conversion of carbon monoxide to useful products was only about 40% of the theoretical, despite the use of low space velocities (maximum of 100 volumes of carbon monoxide per hour per volume of catalyst).

(6) The yield of oil per unit of catalyst per unit of time was low, due to the low space velocity, which in turn was limited by the capacity for removal of the heat of reaction.

(7) The reactors were complicated, extended surface exchangers, with cooling surfaces no farther than 12-15 mm. from any part of the catalyst. Since the process was operated at atmospheric pressure, the reactors were necessarily large.

(8) Recovery of heat of reaction as useful power was low.

(9) The gasoline produced had an octane number of about 40, too low to permit its use as a motor fuel without additional treatment.

From a detailed study of German designs and operating data, it became clear that the only way to lower the costs of the process was to improve its efficiency. This involved finding both a cheaper and more efficient means of heat transfer and a catalyst that would operate at a higher space velocity, the catalyst and the reactor design being interdependent.

For example, if the catalyst temperature must be controlled within 25° F. to maintain activity and product distribution, a minimum quantity of cooling surface must be provided on the basis of a reasonable transfer rate. This in turn fixes the maximum space velocity allowable, assuming that the catalyst activity is not limiting. For example, the heat liberation for 90% reaction of one cubic foot of synthesis gas is about 55 B.t.u.; at a space velocity of 100 the hourly duty would be 5500 B.t.u. per cubic foot of catalyst space. With a transfer rate of 10 B.t.u./sq. ft./hr./° F. and a mean temperature difference of 10° F., the cooling surface required would be 55 sq. ft. These conditions approximate the best design of Ruhrchemie.

It is immediately obvious, then, why space velocity in such a reactor as the Ruhrchemie design is definitely limited. Raising it will increase the heat load, and hence the temperature, so that either product distribution will suffer (i.e., fixed gas production will increase) or the catalyst become fouled with coke. Also, under ideal conditions in such a system, localized hot-spots can still occur. In fact, there is experimental evidence that the true catalyst temperature in a fixed bed system is at least 75-100° F. higher than the observed gas temperature and that at isolated points it is much higher.

There can be no question that catalyst activity has seldom been the limiting factor. More often it has been the efficiency of removal of the heat of reaction. In other words, with adequate heat removal, the space-time yield of oil is potentially much greater than anything that has ever been realized. It was on the basis of this conclusion that engineers of Hydrocarbon Research suggested a program of experimental work in which the space-time yield of oil would be studied as a function of space velocity and cooling surface.

In reviewing the work done by Ruhrchemie and I.G., it became apparent that one possible way of improving markedly the space-time yield of oil was to use the fluid or powdered catalyst technique. With the fluid process, it will be recalled, the catalyst is ground to a very fine powder (approximately 75-80% finer than 325 mesh) and is then maintained in a state of turbulence by aeration with regulated quantities of gas. When the powder is properly prepared, it can be aerated or partially suspended by the gas and assumes many of the properties of a boiling liquid. For example, there is a constant motion of the particles, and while the surface of the bed of powder is reasonably fixed, local eruptions of bubbles are evident. Furthermore, the powder flows freely, exerts a static head, and is compressible.

Among the advantages of the fluid catalyst technique are: (1) temperatures can be controlled within 5-10°

F., (2) the catalyst itself is utilized as a medium of heat transfer, and (3) processes using the fluid catalyst are continuous, since any decline in activity can be compensated by withdrawal of a portion of the catalyst and replacement with fresh material.

Before embarking on a program of experimental work to determine the feasibility of the fluid catalyst technique for the synthesis reaction, it was concluded that the use of a cobalt catalyst was impractical because of the high cost, the limited amount of cobalt available, and the low-octane number of the gasoline. Accordingly, attention was directed to cheap, rugged, iron catalysts.

Experimental Work

The Hydrocol plant to be erected at Brownsville has back of it over a million dollars of experimentation carried on at Hydrocarbon's experimental station at Olean. The ten-barrel per day semi-commercial plant built and operated at the experimental station contains all the elements of a commercial plant:

(1) A continuously operating low pressure oxygen plant with a capacity of approximately 10,000 cubic feet of oxygen per hour.
(2) Pressure generators for the burning of natural gas with oxygen to produce Hydrocol gas.
(3) The synthesis reaction system.
(4) A product recovery system.
(5) Facilities for de-oxygenating the gasoline produced.

Hydrocarbon Research, Inc., started its development work convinced that the Fischer-Tropsch process was fundamentally sound but was woefully lacking in good engineering design. It seemed obvious that the application of modern chemical engineering practice, as typified by the process installations of the petroleum industry in this country, would result in marked improvements in efficiency. In fact, it appeared probable that such engineering improvements would make the process economic in the United States, using natural gas as the immediate raw material.

The principal conclusions from the research and development work were:

(1) The oxygen plant design is sound and oxygen can be produced by the hydrocarbon cycle efficiently and at relatively low cost.
(2) Natural gas can be burned directly with oxygen to produce Hydrocol gas. The operation is controllable and the product gas is free of soot.
(3) The fluid catalyst technique more than confirmed expectations with regard to heat control, and is certainly the most economic method of operating the process.
(4) The exothermic heat of the reaction is almost totally recoverable in the form of high pressure steam. The Carthage plant will produce upwards of 750,000 lbs./hour of high pressure by-product steam.
(5) Conversions of Hydrocol gas of better than 90% are obtainable with a cheap, rugged catalyst.
(6) The yield of oil, based on carbon monoxide reacted, is higher than that obtained by any German investigation, and the treated gasoline is of a premium quality.
(7) The allowable space velocities, and hence the space-time yields, are in order of magnitude greater than any achieved in Germany.
(8) The yield of gasoline can be readily controlled to constitute better than 80% of the total useful products.
(9) There are no real difficulties or novel methods required in separating the products or in deoxygenating the gasoline.

The initial million dollar research and development program carried on by Hydrocarbon Research was financed by three companies: the La-Gloria Corporation, the J. S. Abercrombie Company, and the Socony Vacuum Company. Later material development and engineering contributions were made by the Standard Oil Company of New Jersey and by the Texas Company. The country as a whole should recognize the role these companies have played in furthering the development of cheap synthetic gasoline in the United States.

Significance to Industry

The successful operation of the plant at Brownsville could have far-reaching effects upon our national economy. These effects are most likely to be first felt in the oil industry. The feasibility of producing large quantities of a superior motor fuel from a portion of our "known" dry gas reserves will have been demonstrated. Since these reserves amount to about 175 trillion cubic feet, potentially they represent about as much oil as do our crude oil reserves. In other words, when the Brownsville plant has operated successfully and economically over a period of time, it would then be proper to reckon our oil reserves at, say, 40 billion barrels, rather than at 20-odd billion barrels. Then natural gas will begin to compete with crude oil as a raw material from which to produce refined products. What effect this competition will have upon advancing crude oil process is anybody's guess. Mine is that it will put a ceiling of less than $2.00 per barrel on crude oil.

An obvious corollary to the above has to do with gas conservation. Sometimes it is difficult to legislate conservation, but when conservation is clearly and immediately profitable, no legislation is needed. Despite the conservation measures now enforced by various state regulatory bodies, gas wastage still amounts to about 600 billion cubic feet per year. The major source of this loss occurs in gas vented from oil-gas separators at the fields and from natural gasoline plants. The successful operation of the Brownsville plant will place a portion of this gas in the category of a substitute for crude oil. If it were all used for such a purpose, some 60 million barrels per year of oil would result. The problem of collecting the gas in large quantities will prevent the use of the entire amount, but some of it will be used, and to the extent it is used, true and real conservation will have been practiced.

Further, the Brownsville plant will indicate a method whereby gas now used as refinery fuel can be converted into gasoline. Again, if all such gas were used for gasoline synthesis, the amount produced would approximate 7½% of our 1945 production. Obviously, all will never be so used, but some refineries will use it, substituting heavy bunkering oil for gas as refinery fuel. And this will lead to an advance in oil prices.

Effects on Gas Industry

So much for the immediately foreseeable effects upon the oil industry. But how does this development directly and indirectly affect the gas industry? The effects could be fundamental and far-reaching. Firstly, the competition of natural gas with crude as a source of gasoline is certain to increase the price of gas at the well head. In the next several years, improvements in the Hydrocol process will make possible the production of a barrel of oil from 8000 cubic feet of gas, including all gas used for fuel. If at that time the capital and operating cost of a Hydrocol plant is on a par with an oil refinery (and there is no basic reason why this cannot become true), then 8000 cubic feet of gas at the refinery will be the equivalent of a barrel of 38° A.P.I. gravity Mid-Continent crude. Then, under these conditions, gas at 17 cents per thousand just balances crude oil at $1.35/bbl.; both prices as delivered to the refinery.

It is my guess that gas in such localities as Hugoton, East Texas and the Gulf Coast will never quite reach the equivalent price of crude oil. In the first place, gas transportation is inherently more expensive than the transportation of crude oil.

Secondly, gas must always be transported by gas pipe lines and not by tankers or tank cars. Therefore its mobility is limited. Thirdly, the effect which the actuality of cheap oxygen will have upon manufactured gas costs will tend to limit the competitive value of natural gas for pipe lines. Nevertheless, gas prices will go up. It is not unlikely that, in the localities I have just mentioned, gas at the well head will be worth 10-12 cents within the next decade.

This increase in gas price will affect various pipe line companies differently. Those producing more gas than they buy will benefit. Those buying more than they produce may suffer temporarily. I use the word "temporarily," for once natural gas is competitive with crude oil as a source of gasoline, a price floor is established for gas to pipe lines. I should think that any rate-making body would logically base its calculations upon this competitive and possibly posted price of natural gas, rather than upon the present assumption that a gas well is an integral part of a pipe line system. If gas rates are raised in step with the competitive price set by the price of crude, then with an increasing gas price, the pipe line companies, at worst, will suffer only until the corresponding rate adjustments are made. In any event, it would seem wise for the pipe line companies to endeavor to secure adequate gas holdings and reserves.

I have said that cheap oxygen will tend to limit the price of natural gas in such localities as Kansas and Texas. You will recall that the Germans completely gasified "Braunkohle" continuously, successfully and economically. It appears that improvements, comparable in magnitude to those made in the Fischer-Tropsch process, can be made in the gasification of coal.

It has long been the ambition of the manufactured gas industry to produce city gas directly from coal and oxygen. Compared with the present intermittent methods, the direct gasification process would be more thermally efficient, would eliminate the use of expensive gas oil and could be continuous. Hydrocarbon Research, Inc. has such a process in an advanced stage of development. A small pilot plant has been built and successfully operated in which both coking and non-coking coals are distilled and partially gasified with oxygen. The gas as run from the pilot plant has had calorific values higher than required for city gas. Freed of carbon dioxide, the heating value of the gas has varied from 580 to 900 B.t.u. per cubic foot according to the extent of gasification of the coal.

Based upon these preliminary data and again applying advanced oil refinery techniques to the process design, "guesstimates" have been made which indicate that in such localities as New York, city gas can be made from bituminous coal at a cost less than the cost of natural gas purchased at the wells in Texas for 5 cents per 1000 cubic feet and transported to the east coast by pipe line. Also, the estimated cost of gas by the direct gasification process is much lower than the present cost of gas manufactured by the larger utility companies.

Complete Gasification

These studies posed the further question, "Why haul coal to New York and then gasify it?" "Why not gasify it at the mine mouth?" Hence, a careful, thorough, and intensive survey was made of all German processes. These were evaluated in the light of the data gathered from Hydrocarbon's own experimental work. Then a hypothetical plant was designed. From this preliminary work, it appears certain that eventually a process will be developed whereby either coking or non-coking bituminous or anthracite coal can be completely gasified, yielding a pipe line gas of approximately 1000 B.t.u. heating value. These preliminary studies further indicate that the net thermal efficiency—i.e., the ratio of the heating value of the product to the heating value of the coal, including all coal used as fuel—will be about 80%. In other words, it is to be expected that one ton of 13,000 B.t.u./lb. coal will yield 20,000 cubic feet of synthetic natural gas.

Hydrocarbon Research is presently building a semi-commercial plant to produce directly, continuously and with oxygen both "city gas" and "pipe line" gas. It is hoped the plant will be in operation this year and that quantitative design data will be available next year. Our expectations for the process are based in part upon the data gathered during the course of development of the Hydrocol process, and if they are realized, one can visualize gas pipe line companies serving the north and the northeast manufacturing "synthetic" natural gas from coal mined in West Virginia, Illinois and Pennsylvania. Obviously, this development of the direct gasification process will tend to place a ceiling on the price of natural gas.

We have now seen how the Hydrocol process is likely to affect both the price of crude oil and the price of natural gas, placing a ceiling over the former and raising the latter. We have also seen how the development of a direct gasification process will tend to place a ceiling over the price of both natural gas and manufactured gas. A further factor to be reckoned with in our future economy is the approaching coal-to-gasoline process. An economic process for transforming coal into gasoline will put a ceiling over the price of crude oil even more effectively than the Hydrocol process. Also, it may well increase the value of some of our low grade coal deposits. However, the amount of coal required to satisfy our entire gasoline market will always be small in comparison to the coal used for other purposes, and so the effect on the country's coal economy as a whole can never be great.

I said "approaching coal-to-gasoline process," for we are now well on our way to gasifying coal cheaply, and the combination of the direct gasification process and the Hydrocol process *is* the coal-to-gasoline process. In fact, on the basis of figures now available, 6-cent gasoline from $2.00 per ton coal is not more than two or three years off.

In summary, the successful development of the processes just reviewed will (1) assure this country of an adequate supply of cheap gasoline, city gas and petroleum products for centuries to come; (2) make available cheap oxygen for use in the chemical and metallurgical industries as well as in the gasoline and gas industries; and (3) provide cheap raw materials, particularly carbon monoxide, hydrogen and oxygenated hydrocarbons, to serve as the basis of a great new synthetic chemicals industry.

Presented at A. G. A. Natural Gas Meeting, Cincinnati, Ohio, May 7-8, 1946.

Annual Meeting of the Natural Gas Industry

THE ANNUAL MEETING of the Natural Gas Department of A.G.A. was held in Cincinnati, O., May 7th and 8th. Over 600 gas men attended and listened to a number of important papers touching various problems of the industry.

R. H. Hargrove, Vice President, United Pipe Line Co., and Chairman of the Natural Gas Department of A.G.A. presided at the first general session meeting. In his opening remarks, he stated:

"This is our first meeting in the reconversion era after a great war. The industry's record in that war is now history. It has emerged more solidly in public favor than ever before. Because of its great war record it has now the opportunity to continue that record and to carry on its great task of better and better public service. A fine reputation is hard to get and easy to lose. Let us not lose it. Every unit of our great industry has that specific responsibility to the group, and you and I here today have a part in the program, of fostering and preserving enviable public relations which we earned in the hard way. The conduct of individual managements will reflect credit or discredit on the whole industry and it is our clear duty to live up to high standards of enlightened leadership.

"During the war years we did some planning and thinking and we now have a plan and a program for the present era. You will hear about some of these things at these sessions here in Cincinnati.

"With our energies strained to make our place in the economic reconversion scramble, we are compelled to take time out to reexamine ourselves under the auspices of the Federal Power Commission in an investigation of the natural gas industry. We are contributing liberally of manpower and money in this investigation toward a solution of the problems of control. We are hopeful that out of it will come better regulation, efficiently administered, and that our industry and its problems will be better understood by the public and its regulatory officials.

"The natural gas industry in the past decade has grown with an accelerated pace. It now serves 41 million people in thirty-three states with a network of 218,000 miles of trunk pipe lines and mains with a total production of three and one-half trillion feet and a market value of 750 million dollars. It has advanced from 38 to 48 per cent in the numbers of customers served by the whole gas industry. A recent statistical analysis of 116 natural gas companies shows total assets of over three billion dollars. It is the life blood of the whole gas industry today and has a ready market wherever it can be economically delivered. It is the fuel of the future. Along with the industry's growing importance comes also the increasing responsibility of management to make the way for better living."

R. H. HARGROVE
Chairman Natural Gas Dept.

James G. Stewart, Mayor of Cincinnati welcomed the delegates, and was followed by an address by E. J. Boothby, President of the American Gas Association. In part, Mr. Boothby said:

"An Army that has been successfully pushing ahead, must occasionally hesitate, consolidate its position, throw up a defense, particularly against surprise attack, and then prepare to again go forward. Its actions must be carefully planned, boldly executed and always on the offensive.

"The gas industry has been successfully pushing ahead. Its actions have been planned. It has a resolve to action. Without losing time in its advance it might nevertheless take sufficient time to consolidate its position. Its job is to push ahead across the open plane of opportunity and up the rugged slopes of customer confidence and acceptance. On the horizon lies a new and higher plane of service and prosperity.

"It could be tritely said that the job ahead is to follow through on what has been accepted, to carry out the plans already made. But to do this and nothing more would fall far short of accepting our responsibilities and realizing fully our opportunities. We have an industry united as never before.

"Positive, aggressive, planned action cannot be accomplished in a detached way by isolated units. For full success it must be a comprehensive, consolidated group action. The war taught us that an individual or a small group could endanger the safety of an entire army. It taught us the value—the utter necessity—of coordinated overall activity. And so it is with industry—with the gas industry.

"The gas industry has a plan, a program, a resolve and a unity never before attained. To accomplish its objectives the industry must emphasize and develop and make the most of that unity. Its plans and programs must continue to spring from and benefit its various units. In a democratic society every unit must have a right to speak, every unit must carry its responsibility and every unit must share in the benefits of overall accomplishments. And so we have a job to bring all units of our industry together, to provide means for all to assert themselves and to cause each to assume responsibility in his own sphere. The American Gas Association is the medium through which this unity can and should be achieved. It is a vehicle for expression for the industry. It is the rallying point of the industry for plans, programs and coordinated action. It must be kept strong, it must be continually strengthened.

"Often it is said that business is a purely selfish thing, that businessmen are individualistic and think only of themselves. Such a generality is baseless. It falls completely

L. to R.: D. A. Hulcy, Chairman, A.G.A. Promotional Committee, president, Lone Star Gas Co., Dallas, Texas; R. H. Hargrove, Chairman, A.G.A. Natural Gas Department, vice-president and general manager, United Gas Pipeline Co., Shreveport, La.; and R. W. Hendee, president, Colorado Interstate Gas Co., Colorado Springs, Colorado.

to the ground when the attempt is made to fit it over the gas industry. Our long record of service to the public, both as an industry and as industry members, can be pointed to with pride. The support which A.G.A has had, the hours of toil and gallons of perspiration which industry members have given voluntarily and gladly to its work and planning have been the envy of many another industry. But, we cannot be complacent. Our Association still is representative of less than all of the industry. There are still companies and individuals who accept the benefits of Association activities without assuming their responsibilities. There are those who object to some action or some plan and prefer to criticize from the outside rather than from inside the fold where they could use those same efforts in a constructive way and help to insure that all plans and programs are fully representative of the needs and resources of the entire industry. There are some who think of our appliance and equipment manufacturers as something apart from our industry.

There are a few who still think that an individual unit can succeed locally no matter what the strength or standing of the industry to which it belongs.

"All industry seems to be headed for further restrictions and regulations of various kinds. Politicians and bureaucrats seem to be ever on the search for stalking horses, for an industry which appears profitable and offers them a good opportunity for gaining more personal power. The natural gas industry—in a sense—is in that position now, subjected as it is to a meaningless political investigation instigated by searchers for more power, spurred on by fearful competitors with a sense of the politically propitious. That this issue is being met fearlessly and aggressively is a great credit to the natural gas industry. But the present investigation, far from being an end in itself, is only a means to an end—an indicator of other aggravations to come. To meet them—better, to prevent them — requires again, unified planning and action, aggressive thinking and programs and — tremendously important — emphasis on things positive, particularly the service we are rendering. We must, by sincere salesmanship convince the customer of the real value he is getting for his money.

"It would be easy for us to peer timidly ahead and see nothing but road blocks piled higher and higher on our economic pathway. But standing erect, resolute and determined, and realizing the powerful industry we have, with its plans, its demonstrated fighting ability, its eagerness for action, those road blocks can easily fade away, and what look to be unfriendly faces turn out to be friends waiting to welcome us. And just beyond lies the land of opportunity that can be readily reached through willingness and determination and a sincere desire to render full service."

"Trends in Industrial Relations," was the title of a paper presented by Fred R. Rauch, Manager, Industrial Relations, Cincinnati Gas & Electric Co. "Public interest requires that organized labor as well as management be required to accept full responsibility for its acts," said Mr. Rauch. He warned that the "foundation of satisfactory labor relations rests on the principles of the Golden Rule."

"Fair dealing, honesty, frankness and mutual respect are the basis for fair dealings," he said. "Paternalism has no place in modern industrial relations. Obtaining and maintaining satisfactory relations is a full-time job in any organization."

William A. Dougherty, General Counsel, Consolidated Natural Gas Co., New York, reviewed recent court and commission rulings as they affected the natural gas industry, and E. Buddrus, President Panhandle Eastern Pipe Line Co., discussed the F.P.C. natural gas investigation, and the same subject was also discussed by E. Holley Poe.

The General Sessions meeting on Wednesday was addressed by H. Carl Wolf, Managing Director of the American Gas Association, and H. D. Hancock, Chairman, Technical and Research Committee, Natural Gas Department outlined the work being done by the committee in connection with the research program.

L. to R.: A. C. Perry, Peoples Natural Gas Co., Pittsburgh, Pa.; L. L. Tonkin, Hope Natural Gas Co., Clarksburg, West Virginia; H. C. Cooper, Sewickley, Pa. (past chairman, A.G.A. Technical and Research Committee); J. French Robinson, The East Ohio Gas Co., Cleveland, Ohio (past president, American Gas Association).

D. A. Hulcy, Chairman, Promotional Committee brought the activities of his committee up-to-date. He said in part:

"Much of the future of the gas industry will be measured by the extent to which gas is used in the millions of new homes that are to be built and the millions of others that are to be modernized. These homes mark the frontier of a new America and we intend to be pioneers in developing that frontier. We recognize that the time to install gas in these homes is before they are built. This means that a primary campaign must be directed toward those who plan and build the houses and those who finance them. The gas industry is well fortified for such an effort.

"Many utilities are already setting up Home Planning Bureaus as a public service to the people of their communities, particularly the veterans. In doing so, they are guaranteeing future loads through the installation of those gas appliances essential to better living. They are building the New Freedom Gas Home of Tomorrow.

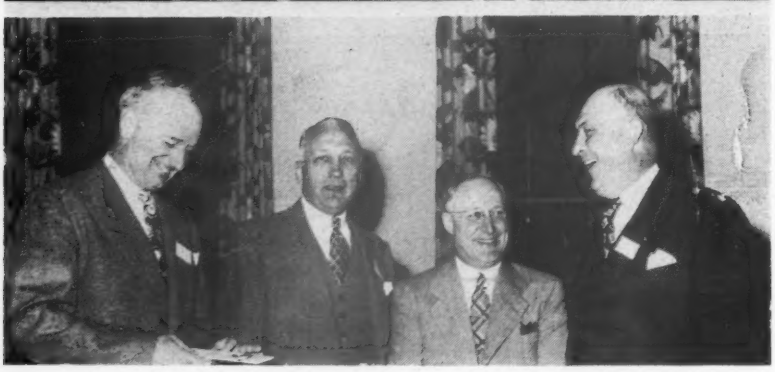
"Specific promotion is under way or is planned for every use of gas in the home. Many of these plans revolve around the New Freedom Gas Kitchen. The gas industry is throwing the spotlight on this heretofore drab and uninteresting part of too many homes. Your imagination has painted it and given it new color; you have redesigned it and given it new form and beauty; you have ventilated it, giving it freedom from cooking odors; and you have re-equipped it, giving it efficiency, economy and satisfaction.

"It is evident that gas is going to feel keen competition from other fuels, particularly electricity, in those areas where heretofore we have enjoyed almost a 100 per cent saturation. Our plan is to bring the story of the advantage of gas in commercial cooking to the members of hotel and restaurant associations, purchasing organizations, architects and builders who specialize in hotel, club, hospital, and restaurant kitchens, and all others who are interested in any way in the mass preparation of food.

"And we are going to take advantage of another public relations tool —a Speakers' Bureau. We are going to make the voice of the gas industry heard in those places where public opinion is formed. We will select and mobilize our most able speakers and will seek a place for them on the programs of influential national conventions, particularly those groups with whom we enjoy some mutuality of interest, such as the builders, contractors, architects, bankers, plumbers, and others.

"In addition, the Promotional Bureau will relay information to regional associations and local utilities regarding meetings of groups before whom the story of gas should be told. Assistance will be provided those who wish to take advantage of such valuable opportunities."

L. to R.: R. M. Conner, director, A.G.A. Testing Laboratories, Cleveland, Ohio,; F. C. Adams, president, Surface Combustion Corp., Toledo, Ohio; and A. F. Bridge, vice-president and general manager, Southern Counties Gas Co., Los Angeles (past president, American Gas Association).



Upper Group: L. to R.: Norton McKean, American Meter Co., Albany, New York; Hugh H. Cuthrell, The Brooklyn Union Gas Company, Brooklyn; E. P. Noppel, Ebasco Services Inc., New York; B. Newhall, Philadelphia Gas Works Co., Philadelphia; A. H. Stack, Tampa Gas Company, Tampa, Fla.

Lower Group: L. to R.: Frank S. Kelly, Jr., Arkansas-Louisiana Gas Co., Shreveport, La.; Frank C. Smith, Houston Natural Gas Corp., Houston, Texas; L. L. Dyer, Lone Star Gas Co., Dallas, Texas; Chester L. May, Lone Star Gas Co., Dallas, Texas.

"Gasoline from Natural Gas" was the subject of a paper presented by P. C. Keith, President, Hydrocarbon Research, Inc., New York. He described new developments being carried on of great importance to both the natural and manufactured divisions of the industry. It is printed in full in this issue of the *Journal.*

A progress report of the Natural Gas Reserves Committee, was made by Lyon F. Terry, Vice Chairman. The Committee is composed of the following members:

N. C. McGowen, President, United Gas Corp., Chairman; Lyon F. Terry, of The Chase National

(Continued on page 58)

Jewels of Cooking Performance

BY ROPER

"AMERICA'S FINEST GAS RANGE"

"STAGGERED" COOKING TOP

"SIMMER-SPEED" BURNERS

LARGE "3-in-1" OVEN

"GLO" BROILER

"SCIENTIFIC" COOKING CHARTS

The new ROPER Gas Ranges of today are superlative cooking appliances, bringing to you features that are truly "Jewels of Cooking Performance"... One of these that stands out even in this stellar company is Roper's patented "Staggered" Cooking Top . . . Advantages? Many! A full 40-inch cooking surface. Plenty of room for 4 large utensils. Elimination of reach-over and reach-around.

AN OUTSTANDING "JEWELED" FEATURE

ROPER'S "STAGGERED" COOKING TOP...

GEO. D. ROPER CORPORATION

Rockford, Illinois

Offices and warehouses in principal distribution centers.

Bride's Cooking School

Conducted by Home Economics Dept. of Southern California Gas Company

By

Fred A. Herr

THE TRADITIONAL lithoidal character of brides' biscuits, target for merry witticisms from time immemorial, is currently undergoing a "reformation" in California under the influence of the Home Service Department of the Southern California Gas Co. of Los Angeles.

This utility has taken cognizance of the gastronomic perils that supposedly beset bridegrooms. It is doing something about it in the form of an educational program that makes available to brides a series of cost-free cooking, baking and general food preparation courses. The program is specifically designed for ladies who, before their wedding day, were more familiar with adding machines and filing cabinets than with sauce pans and soup pots.

Entitled "Brides' Cooking School," the program is presented under the direction of Gladys B. Price, who has resumed her post as home economics director of the gas company after three years service as a lieutenant in the *Waves*, and Mercedes Bates, who headed the department during Miss Price's leave of absence.

Day and Night Classes

The overall program was planned as a series of evening cooking classes, which have already been concluded, and a series of day classes, which was inaugurated on April 1.

The courses for both the night and the day classes were prepared by Christabel Anderson and Eleanor Hielman, staff members of the Home Service Department.

The night classes were held in nine cities in the company's system, once a week for five consecutive weeks in January, February and March. The courses in all the cities were identical. The class hours were from 7:30 to 9 p.m., except at Tulare, Calif., where an afternoon schedule was arranged. Attendance at the night classes ranged from 150 in Los Angeles and Hollywood to 40 in Visalia.

The first series of classes was started at Inglewood on January 14 and was held there on consecutive Monday nights until February 11. The last class in the night series was held at Tulare on March 6, the schedule in that city not having started until February 6.

"The courses were sponsored by the gas company," Miss Bates explained to *American Gas Journal*, "as a community service in the various cities in which they were presented and for the additional purpose of contacting special types of consumers and inexperienced brides who have yet to buy their first gas appliances.

"We hope that if the bride can be encouraged to look to the gas company for advice on how to cook and bake, she will eventually also be inclined to look to the gas company when the time arrives for her and her husband to buy appliances for their first home."

Five Lessons Offered

Designed for prospective brides who have only a limited, and, in many instances no knowledge of cooking and baking, the courses offered in the night as well as day classes covered every aspect of home economics, from buying and storing foods to methods of planning, preparing and cooking company meals for at-home entertaining.

Five well-planned lessons, one for each of the five weekly classes, were offered. In their order of presentation, they dealt with An Introduction To Cookery, Breakfasts, Lunches, Dinners, and Entertaining At Home.

At every class, swinging mirrors over the worktable enabled the students to see how a recipe is put together, how the foods are cooked with a gas range, and what the dish looks like when finished.

Pre-class literature distributed to students explained the purposes of the series and provided general information on meal planning, nutrition, the seven groupings of foods according to nutritional values, marketing, and the use and care of gas ranges and refrigerators.

The Art and Science of Cooking

Keyed to the slogan "Where There's a Will, There's a Way," the informative literature pointed out that the love for good food is sustained by art and science. The students were shown that Art is represented by selection of foods for harmony of colors, flavors and texture; by choice of garnishes and attractive arrangement of foods; by precise table setting and eye-pleasing table decorations. Science, they were advised, is represented by such factors as planning balanced meals, selecting foods for their nutritive value, time and temperature control in the form of proper application of heat to raw foods, and the use of tested recipes.

A loose-leaf brochure containing a wealth of information on cooking was presented to all attending the classes. The booklet, prepared by the gas company's advertising department, is illustrated with clever cartoons by Maurine Boradori and photographs by Corlis Guy to show the right way to use different food items in meal proparation.

Basic Methods Set Forth

"Our aim," the foreword states, "is to present basic methods in careful preparation of foods, and to save you from obsolete trial-and-error cookery attempts.

"Our services go beyond these five lessons. Mail or telephone requests will bring you our tested recipes, menu suggestions, or our attractive pamphlets on box lunches, canning, laundry, and care of your gas appliances.

"We also have a library of colored slides on various food topics. These are suitable for presentation at your club meetings. Our home economists will be glad to present these slides with informal talks. Call our home service department for bookings."

Shopping Tips Given

Advice contained in the booklet on the subject of buying food and planning meals included practical "tips," concisely phrased, and arranged in

the form of a reference chart to guide the inexperienced housewife while shopping. The following procedure was suggested:

Check staples and perishables.

Outline meals that will check with Uncle Sam's food chart and also please your husband.

Make a grocery list to cover three or four days' supplies.

Buy in this order:

First, staple foods; then such other essential kitchen supplies as coffee, packaged breakfast foods and soaps.

Second, meat, fish, poultry or rabbit.

Third, dairy products.

Next, fresh fruits and vegetables. Buy morning-fresh products. Select those in season for best flavor, color, food value and economy.

Last, frozen foods. Buy these just before leaving the market.

Under "Put Them Away!" the brides were told how to store, wash or drain frozen foods, meat, eggs, tomatoes, citrus fruit, berries, etc., and also what not to do in respect to shelling peas or lima beans, cutting up vegetables that might shrink or lose nutritive value, and removing husks from corn-on-the-cob. Similar pertinent advice was given for staples, canned goods and root vegetables.

Introduction to Cookery

Lesson No. 1 in the series was in the form of an introduction to cooking in general and dealt with the principles of cookery. This course included such subjects as definitions of "kitchen lingo." Assuming that some brides do not even know what "broiling" or "simmering" implies, Lesson No. 1 undertook to explain in simple language the meaning of broiling, stewing, simmering, steaming, boiling, roasting, baking and frying.

Breakdowns of kitchen "arithmetic" were also given: That, for instance, one pound of flour is equivalent to four cups, and one pound of bacon equal to 20 to 24 slices. How to measure shortening, dry ingredients, liquids also was explained, as well as the proper way to sift flour, cut in shortening, knead milk into dough, roll the dough for biscuits, and place the biscuits in the pan.

Breakfasts In Lesson No. 2

Lesson No. 2 concerned breakfasts and included complete instructions on how to plan various types of breakfasts for variously sized families. The mysteries of preparing hot and cold cereals, frying, scrambling, poaching and boiling eggs, baking breakfast bread, biscuits and coffee cake, and making coffee were explained in theory and backed up by practical demonstrations with gas ranges set up in the class room.

The Southern California Gas Co. set up this display in the show window of its headquarters building as publicity for the Brides' Cooking Classes sponsored by its Home Service Department.

Lesson No. 3 covered lunches and the preparation of sauces, soups, salad, salad dressings, muffins. Sample lunches based on company-selected recipes were prepared during the class.

In Lesson No. 4 the course dealt with Dinners and how to prepare the courses from appetizers to home-made pie. Students were instructed how to prepare roast meat, fish, vegetables, yeast rolls and gravy. Part of this lesson included the presentation of a meat roasting chart. The students were advised that a meat thermometer is the most accurate device with which to determine whether or not a roast is "done"—and the reasons why. Lesson No. 4 also dealt at length with fresh and canned vegetable cookery, baked potatoes, oven meals.

Entertaining At Home Explained

The fifth and final lesson in each five-week series dealt with entertaining at home. The students were let in on a list of "entertaining tricks" designed to make them accomplished in planning for expected or unexpected entertaining occasions.

"The planner," the students were told, "is never caught short, is seldom the victim of entertaining stage fright. For future reference keep a file record of menus, recipes and the favorite dish of guests. Always give every dish a tryout. Give it a practice researsal for your husband's benefit and approval before serving it to guests. Develop two or three specialties — dishes you can serve time and again. Regardless of the season, every good meal has at least one hot dish. Vary the color, flavor and shape of foods. Don't repeat a food in a menu."

Among the advice given in respect to hostess' behavior was the following:

"Hostess, be seated! How can guests enjoy a meal if the hostess jumps up constantly to bring this or that to the kitchen? Try these tricks for reducing kitchen trips to the minimum:

"Serve the first course in the living room and place the main course on the table before seating guests; place chilled juice for the first course to the right of water glass and have main course on the table before serving guests; use buffet or tea wagon at serving table.

"When you are invited out, keep your eyes open. Observe the achievement of other hostesses. Top trick, or Life Saver, is use an emergency shelf. Keep an emergency shelf well stocked with just-in-case extras. . . ."

Advertising Promotes Classes

The Southern California Gas Co. backed the program of its Home Service Department with various

(Concluded on page 57)

These dramatic promotion helps will develop interest in Gas Refrigeration for you

Send them through the mails... distribute them on your showroom floor to build gas load and good will in '46

To aid you in focusing attention on Gas Refrigeration now—when your prospects are making decisions about new refrigerators—Servel offers seven sales-stimulating promotion pieces. Each is slanted toward a specific and important market—consumers, architects, builders and apartment house owners. Each features the silence and long life of the Servel Refrigerator. Together, these specially prepared pieces will not only help you keep individuals sold on the advantages of Gas Refrigeration, but develop volume refrigerator business in the wholesale field. Put them to work now selling the modernity of gas and gas service to every prospect in your community.

1 Homemaker's Digest—Cast in the highly successful "digest" form, this four-color magazine condenses outstanding articles on refrigeration and other household subjects from America's leading women's magazines. Each issue also contains specially written editorial stories dramatizing the superiority of the Gas Refrigerator and other gas-using appliances. An exclusive Servel-sponsored Gas Industry promotion.

2 Celebrity gas bill insert—Ideal enclosure for monthly bills. Uses Fred MacMurray's "box office appeal" to tell Servel's story of silence and no moving parts.

3 1946 line folder—Explains with words and pictures why the Gas Refrigerator is "Different From All Others." Illustrates and fully describes each of the new 1946 Servel models.

4 Apartment house folder on Gas Refrigeration—Designed to sell the men who buy refrigerators by the *dozens*. It shows how Servel's silence insures tenant satisfaction...how its continued low operating costs save repair and replacement parts bills.

5 Illustrated envelope enclosure—Gives housewives good reasons why they should wait for the refrigerator that "stays silent, lasts longer." Testimonials emphasize Servel's unmatched record of wartime dependability.

6 Builders' folder on Gas Refrigeration—Shows how builders can profit by Servel's continued low operating and maintenance costs. Gives 7 big advantages of Gas Refrigeration. Illustrated with "success stories" of long-term Servel installations in homes and apartment houses.

7 Architects' folder on Gas Refrigeration—Contains complete specification and installation data architects need now when they are planning new homes. Describes in detail Servel's simpler method of operation, cabinet construction, finish and equipment.

Plan now to use these Servel folders and booklets in your all-out drive for a bigger gas load. For complete information on these dramatic promotion helps, write today to Servel, Inc., Evansville 20, Indiana.

Servel, Inc.
Evansville 20, Indiana

Here's the Furnace for

THOSE G. I. HOMES

THE *new* BRYANT

STEEL GRAVITY WARM-AIR FURNACE

Holding down the cost of materials and equipment is important in the building of G. I. Homes, because of rigid government limitations on this type of construction. And in order to keep within the required cost range without sacrificing quality, those who are a part of the gigantic Veterans' Housing Program are looking to new materials and new equipment.

Now coming off production lines in ever-increasing quantities is the *new* Bryant steel gravity warm-air furnace. Here is a completely automatic furnace with a reasonable price which enables it to be installed in any G. I. Home with satisfaction and economy. It has many of the features incorporated in higher-priced Bryant equipment, and is the most quiet, compact and sturdy gas-fired furnace ever offered in the popular-priced field.

And back of it is the famous Bryant name—the name which has signified quality gas heating equipment for more than thirty-five years. Ask the nearest Bryant representative to tell you the complete story on the new Bryant steel gravity warm-air furnace. You'll agree that it's *the furnace for those G. I. Homes!*

BRYANT HEATER COMPANY
17825 St. Clair Ave., Cleveland 10, Ohio
One of the Dresser Industries

NEW STEEL GRAVITY WARM-AIR FURNACE OFFERS THESE FEATURES:

1. **Drum-tube Heat Exchanger**—flue gas travel all upward, no condensation pockets, quiet operation.
2. **Inner Radiation Shield**—completely surrounds heating element to insure low casing temperature.
3. **Axial Burner**—cast iron with raised drilled ports; easily accessible, adjusted or removed.
4. **Easy-Reach Controls**—handily located for inspection and adjustment.
5. **Compact Draft Hood**—easily removed to provide access to heat exchanger tubes.
6. **Attractive Casing**—gray finished steel; compact, sturdy design.

bryant GAS HEATING

LET THE PUP BE FURNACE MAN

The most complete line of gas heating equipment in the nation!

Commercial Gas Cooking Equipment—
What is our Competition?

By
L. L. Peters
Sales Manager
Southwestern Sales Division
American Stove Co.

THIS is a very important subject and one that has always required our very best attention, and surely in the future it will require even more of our attention as the commercial gas cooking load is a very important part of the total commercial load and is usually sold at very profitable rates.

A questionnaire was mailed to a cross section of the membership of our association on February 25th requesting information as to competitive fuels in 1941, in 1946, and opinion as to 1951. Information was also requested as to popularity of fuels for the specific cooking services in commercial kitchens, that is, ranges, fryers, counter equipment, and bake ovens.

Most of the questionnaires were promptly completed and returned, in fact, more than 90% were returned and a cross section of each state in our association is available. This shows a very great interest in this phase of our business—and, may I say, some concern as to our future competitive situation.

A resume of "state-wide" competitive conditions and trends is as follows:

Summary of Survey from Questionnaire Mailed to Gas Utilities

	Competitive Fuels			*Fuel Used For* *Ranges*			*Fryers*			*Counter Equipment*			*Bake Ovens*		
State	1941	1946	1951	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Alabama	O	E	E	G	E	O	E	G	..	E	G	..	G	E	O
Arkansas	O	O	O	G	O	E	G	E	..	E	G	..	G	E	..
Florida	O	O	E	G	O	E	E	G	..	E	G	..	G	O	E
Georgia	C	E	E	G	E	C	G	E	..	E	G	..	G	E	C
Louisiana	BU	BU	BU	G	BU	O	G	BU	..	E	G	..	G	..	..
Miss.	E	E	E	G	E	C	G	E	..	E	G	..	G	E	..
N. C.	C	O	E	G	E	C	E	G	..	E	G	..	C	G	E
New Mex.	..	..	E	G	..	..	G	..	..	G	..	..	G	..	..
Oklahoma	E	E	E	G	E	..	G	E	..	G	E	..	G	E	..
S. C.	C	C	E	G	E	C	G	E	..	E	G	..	G	C	E
Tennessee	E	E	E	G	E	C	E	G	..	E	G	..	E	G	C
Texas	E	E	E	G	C	O	G	E	..	G	E	..	G	E	..
Virginia	C	E	E	G	..	..	G	E	..	E	G	..	G	E	..

Note: C—Coal. E—Electricity. G—Gas. BU—Butane Gas. O—Oil.

Even more interesting are comments from the completed questionnaires, some are as follows:

"The electric industry has been increasingly active in attempts to secure a part of the commercial cooking load. The reasons for the limited success which they have so far attained is believed to be active sales efforts on the part of electric companies, effects of national advertising by manufacturers of commercial electric equipment in monthly magazines and the stimulus in certain localities caused by the prospect and discussion of cheap electric power from proposed hydro-electric projects."

"To date the electric industry has concentrated on the sale of deep fat fryers and bake ovens. We believe that their reasons for doing so is that the fryers and ovens are probably the best commercial electric appliances available and that they are attempting to obtain a foothold in the commercial cooking field by securing the installation of appliances which they believe will give superior performances. If this is their plan, we will later face added competition by the electric industry for all of the commercial cooking load. Their sales effort will be strengthened by the argument that additional electric cooking equipment can be operated very cheaply on the comparatively low increment rate for additional service."

"Counter appliances are gradually getting away from gas fuel."

"We find that competition is less difficult where a gas utility offers good service on commercial cooking equipment such as: Monthly Cleaning, Inspection, and regular repair service. If it were not for this, we would have more difficulty retaining this business."

"No active competition from any fuel except electricity."

"While gas is at present the predominant fuel for commercial cooking, we expect some serious attempt to snatch a great part of this load in the future, mainly through the sale of counter equipment, deep fat fryers, and bake ovens. Unless modernistic and improved gas counter appliances, improved fryers, and bake ovens are made available, we shall have a real fight on our hands."

"The expected tourist trade is bound to open up many new, modern eating places along the outskirts of our cities and towns where gas is not now available and some means, such as bottled gas, should be provided in order to meet electric competition before it gets to our present lines. In this manner we could preserve our load until such time as it was expedient to run necessary mains to serve."

"Many men who have been cooks in the navy are going to return to civilian life after having used electric ranges aboard ship and they are going to want or try to influence their employees to change to electricity for cooking. Our hope in combating this competition is to give better and more service."

"Gas dominates our market here. Electricity is negligible but is beginning to show signs of aggressiveness—particularly in the deep fat fryer field."

"For gas to continue to be competitive or to continue as first choice as a commercial fuel the gas industry should have more gas equipment for counter and small restaurant use that is competitive with electric equipment. A commercial gas refrigerator is needed."

"We are currently losing two of our major kitchens to electrical equipment."

"We maintain a monthly free inspection service to all of our commercial users which we think is helpful in getting and holding this class of business."

"No competition now."

"We employ a full time qualified Commercial Gas Cooking Engineer.

* *Comments are quoted.*

That together with our low rates for natural gas reduces our competition in this field to the barest minimum."

"Our real competition, in the immediate future, looks like it will be from the electric side, and the electric industry, along with the various utilities, have plans now for the manufacturing and distribution of more efficient electric commercial cooking and baking equipment. We can also expect, as soon as the free spending is over, real competition from oil; as the restaurant operator will look for, what appears to him, to be cheaper fuel. This, of course, will be oil.

"There is a bright side to this, however, in that it is a real challenge to the gas industry to quickly get under way a program, so designed, to reach our commercial users. This program should be focused towards convincing our commercial users that gas is the cheapest and best of any services that they might use, in connection with their cooking operations. I believe that a concentrated program on both service and education will do this."

Electric Competition

This is what *you* think your competition will be in 1951. The picture is not good. The trend seems to be to electricity for cooking. In the eastern part of our association, in manufactured gas territory, electric competition is here and in addition to counter equipment, fryer and bake oven load, many electric ranges are being used and the "all electric" commercial kitchen is increasingly noticeable, also the natural gas territories are forecasting that electricity will be their major threat by 1951.

This inroad of electricity must be stopped now. It is a problem of The Southern Gas Association and the American Gas Association, Gas Utility Companies, and appliance manufacturers. As I see it, there are many things we can do. As manufacturers, we must continue research and continue to improve design, construction and performance; we must also promote and advertise, we must have trained aggressive sales personnel to assist in this job.

AGA must continue and enhance their program of research, advertising and promotion. The good job they are doing now must go forward with ever increasing momentum.

You as utilities must continue a most aggressive sales program. This program must include advertising, floor displays, constant surveys and aggressive intelligent salesmanship.

"To be pre-warned is to be forearmed." You can keep this commercial cooking load easier than you can get it back after it is lost. The time to start is now. Begin to make your surveys. Institute a regular monthly cleaning, inspection and repair service. Co-operate with hotel and restaurant equipment houses and let them know you want their assistance and do something to earn it. Tell your gas appliance manufacturers what you need for the job you have to do. Begin your promotional programs now. Meet this competition fairly and squarely and in 1951, the picture will not be as it is now projected because you will have done something about it.

Merchandising Commercial Equipment by Gas Utilities

Gas utility companies in promoting the sale of commercial equipment should avail themselves of the following activities:

1. *Newspaper Advertising:* This could be directed at the food service trade. Or could be aimed indirectly by talking to the consumer public. This "indirection" would describe and illustrate the latest installation by some local restaurant or hotel. This would accomplish a double purpose, namely, sell the consumer and the food service management because they both use gas appliances.

2. *Floor Displays:* There should be an excellent display of commercial equipment, a complete battery showing all the various items such as range, broiler, oven, frialator, etc. They should be connected to gas so that a live demonstration can be given. When the prospect warrants the expense, actual cooking and baking demonstrations should be given to convince the prospect of the efficiency of the operation. Evenly baked pies, roasts and rolls would go far to prove improvements in modern commercial equipment.

3. *Window Displays:* This would consist of a typical appliance and interesting photographs of outstanding installations in the town. Enlargements of eating places which enjoy local renown would cause the public to stop and examine them.

4. *Wall Displays:* Photographs of local commercial installations should be hung on the walls. Where wall space is not available a "Multiplex" display fixture could be used very well.

5. *Wall Maps:* Maps of the city with colored pins to denote commercial installations would do much to sell the prospect on the need for new equipment due to his competitors bringing their own establishments up to date.

6. *Wall Charts:* Accurate records should be kept at all times of relative gas consumption on new commercial equipment. Photostats of gas bills before and after installation should be displayed to indicate gas savings. Here, too, a Multiplex could be employed to advantage.

7. *Testimonial:* A collection of testimonial letters should be acquired. These would tie in to the foregoing wall charts also maps, and photographs.

8. *Survey:* A complete survey

SUPERIOR GAS METERS
For Sound Values and Continuous Operating Economy
Meters for Domestic and Industrial Use. All Sizes 5B to 60C.
Wet Test and Demonstration Meters — Diaphragms —
Service Cleaners — Provers — Meter Repairs
Write for details and quotations
SUPERIOR METER COMPANY, INC.
167 41st Street Brooklyn, N. Y.

should be made of the food service market. The equipment should be tabulated, its condition, age, etc. Its inadequacy should be particularly noted. Increase of customers puts undue burden on equipment and creates customer dissatisfaction because of consequent poor service.

This survey should be used not only to sell new equipment but to sell additional needed equipment such as bake ovens for having "home-made" pies and rolls.

9. *Card Index:* The survey should be carefully card-indexed by districts, etc. This index should be employed for intelligent solicitation. That is, tabbing the cards reveals when new equipment should be pressed, where calls should be made, etc.

10. *Direct Mail:* With an adequate survey and card-index, the utility is in a splendid position to employ this list of prospects for mailing pieces of sales literature. This could consist of pieces supplied by the manufacturer or simple mailings prepared by the utility's advertising department. Mere post-cards can be very effective if mailed frequently and followed up consistently.

11. *Specialists:* For successful commercial equipment merchandising, the utility should train "specialists," salesmen who devote their entire time to this work. The manufacturers will be glad to join in such training.

12. *Sales Kits:* The commercial equipment salesmen should have adequate "Sales Kits." They should consist of photographs of installations, records of gas saving, testimonial letters, price lists, catalogs, etc. The salesmen should be ready at all times to cover the subject completely and convincingly.

13. *Compensation:* Commercial equipment calls for the highest caliber of salesmanship. None but a very intelligent and resourceful person can hope to achieve success in this highly competitive and intricate field. Such exceptional salesmanship can only be obtained by adequate compensation. Sufficient income must be insured to attract the proper type of salesman.

14. *Cooperation:* Hotel and Restaurant equipment houses should be part and parcel of this program. Let them know you want and need their assistance. Work with them. Help their salesmen on tough jobs. Conduct educational and specialized sales programs for them.

Presented at meeting of Southern Gas Assn., Galveston, Texas, March 21-22, 1946.

Kitchen Planning To Be Theme Of McCall Awards

Kitchen Planning will be the theme of the Sixth Annual Award offered by McCall's Magazine, through the American Gas Association to public utility operating companies, home service directors, or representatives, or directors and members of the staff of companies engaged in kitchen planning operations, in the period from November 1, 1945 through June 30, 1946. The awards will be presented to the department, or department head, or individual deemed to have made the most outstanding contributions to the advancement of living by means of educating the American housewife toward better planned kitchens that made use of gas equipment.

While entries for the awards are no way restricted, any company or its employees may include in the report submitted an account of its participation in the New Freedom Gas Kitchen program. Better kitchen planning under the terms of the award includes planning for efficient work, for comfort, and for attractiveness. New Freedom Gas Kitchen programs are based on these principles, but similar programs initiated under different titles or without specific names will be given equal consideration.

Five Prizes Offered

Five prizes will be offered in this year's award. The first prize will be an engraved plaque, bearing the name of the winner and to be retained one year, presented to a Home Service or Kitchen Planning Department. A duplicate plaque will be presented to the winning department for permanent possession. An individual prize of $150 in Victory Bonds and Stamps or cash will be awarded to the Home Service Director, or Directing Head or to a member of the Kitchen Planning Department awarded first prize.

Winners of the second, third, fourth and fifth prizes will receive illuminated parchment certificates for the department, with individual prizes of $100, $75, $50, and $25 respectively, in Victory Bonds and Stamps or cash.

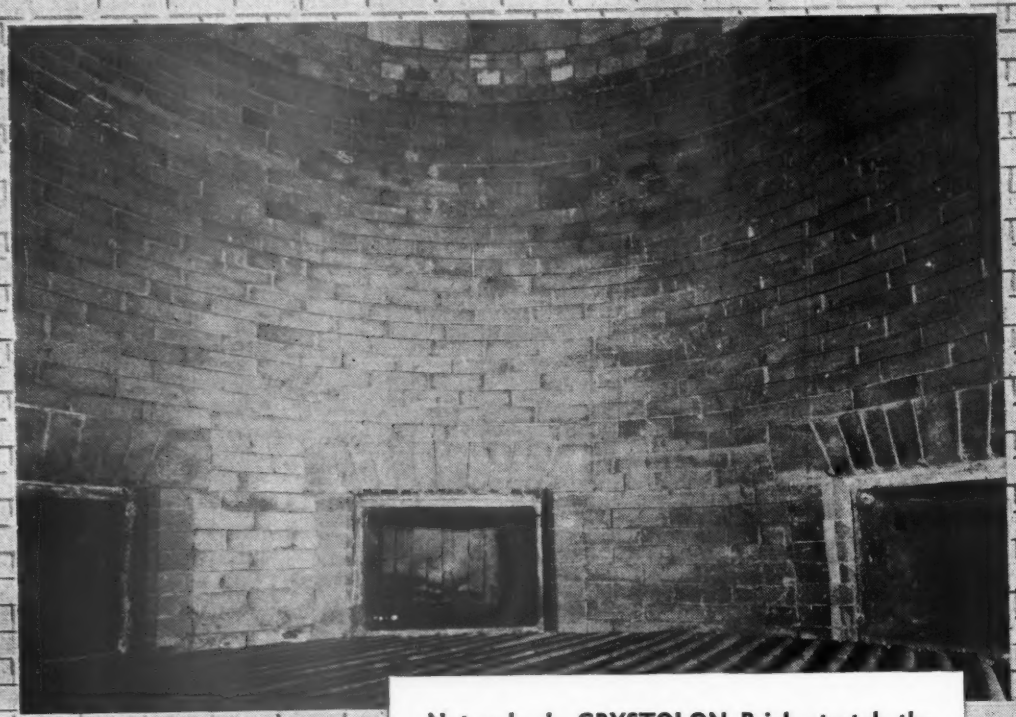
Entrants are asked to submit 4 copies of a report of 2,000 words or less, with one copy of any appropriate photographs, leaflets or other material showing the scope of the work, covering the following points: (a) The plan developed as a means of helping housewives to better kitchens; (b) The means used to achieve this result; (c) Progress made during the period to achieve this result; and (d) A summary of the accomplishments.

In order to guide the judges, each report should have a foreword giving the total number of residential customers served as a whole and by the particular division competing for the award; brief description of the territory served, as to whether it is a concentrated area or scattered with preponderance of small communities; and the number of company offices from which the activities were carried on. Simple straight-forward facts are preferable to elaborate reports, though samples of customer literature prepared and used in the company should be included.

The Jury of Awards will consist of five members of the gas industry, none of whom shall be officers or employees of the American Gas Association or associated with McCall's Magazine. In judging entries, accomplishments will be considered with relation to size of the entrant and the territory served, in order that small departments may compete on an equal basis with large departments.

Entries should be addressed to McCall's Magazine Awards, c/o American Gas Association, 420 Lexington Avenue, New York 17, N. Y., not later than midnight of July 15, 1946. The presentation of the awards will be made in October, 1946.

Crystolon Brick for LONG LINING LIFE!



Not only do CRYSTOLON Brick stretch the life of generator linings very considerably due to their refractoriness, chemical stability and resistance to the penetration of molten ash, but also these silicon carbide brick often pay for themselves the first year by savings in cleaning costs alone. Among water gas plants, in generator after generator, CRYSTOLON Brick are increasing lining life, reducing cleaning time. An important feature of CRYSTOLON Brick is that their dense, hard surface resists slag penetration and therefore the clinker ring is quickly broken free, leaving the surface of the lining clean and undamaged for further service.

NORTON COMPANY
WORCESTER 6, MASSACHUSETTS

Norton Longer Lasting Refractories

A Device For Obtaining Readings From Unattended Stations

By

G. H. Davis,

Division Engineer
The Connecticut Light & Power Co.
Thompsonville, Conn.

THE present trend in advertising would lead us to believe that any device that is not "electronic" and does not have at least five vacuum tubes in its construction somewhere is not suitable for modern use. This device does not meet these requirements. It has no vacuum tubes and no complicated wiring. Any plant electrician should be qualified to install and maintain it. All of the present installations were made up from parts available in our shop or obtainable from suppliers at little cost.

The device described in this paper is indeed a direct descendant of necessity, which is the alleged mother of invention. The relocation of our operating headquarters from our building in Windsor Locks to a new service building brought up the problem of maintaining 24 hour coverage at the old building with no real job to be done by the attendants or of finding some means of operating safely with no attendants. The original device was made up in answer to this problem and proved a satisfactory solution. It was later found that by combining the essential features of this and other devices it will perform several functions and can be adapted to meet many different problems.

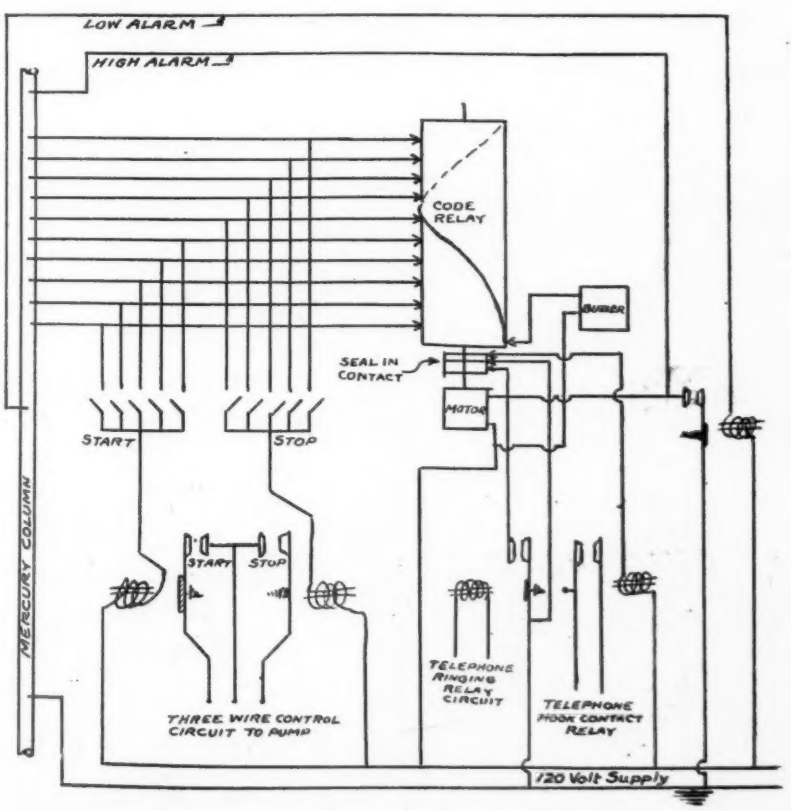
For example, the device will control the starting and stopping of pumps at variable pressure points, will relay the pressure readings at any time to some remote point, and will automatically sound alarms at the point of installation and also relay alarms to a remote station should the pressure reach a danger point.

It can control motor operated valves or similar devices on a gas holder as the holder fills or empties, will relay the reading of the holder height to a remote point at any time, and will sound alarms at the holder and at the remote station should the holder travel beyond predetermined limits.

The original installation of the device was made at the Windsor Locks station of the Connecticut Light and Power Co. for the purpose of relaying alarms from this station to the service building in Enfield, a distance of about three miles. This installation consists of several different alarm circuits connected to the relay which transmits the alarm over a private telephone line to the service building, each alarm being identified by a separate code so that the attendant on duty at the service building can easily tell which system is in trouble and can dispatch the proper trouble man to the station to take care of it. It does not interfere with the normal use of the telephone. The alarms transmitted cover the following:

1—High or low pressure in the Hortonsphere (high pressure gas storage).
2—Tripping of circuit breakers in the electric sub-station.
3—High or low pressure in the high pressure gas transmission line.
4—High or low pressure in the gas distribution system for the town of Windsor Locks.
5—High or low pressure in the town water supply system which the company operates.
6—High or low water level in the canal which the company also operates.

When any of the above alarm contacts are made it trips a toggle type relay and starts the code ringing device operating which sounds the proper code (depending on which alarm has operated) on a buzzer located at the telephone instrument. It also closes a switch that bridges the contacts in the telephone the same as if the receiver of the instrument were lifted. The attendant at the service building receives a signal on the P.B.X. telephone board the same as for an incoming call and when he answers he hears the sound of the buzzer ringing in code. From the code he can tell which system is in trouble and sent a trouble man to the station to correct it. Due to the use of the toggle type of relay the alarm continues to operate until the trouble man resets it manually at



Wiring for Combined Start-Stop Control, Code Relaying Device and Alarm Relaying.

which time the P.B.X. board flashes a "disconnect" signal and the telephone can then be used for normal conversation. No attendants are on duty at the Windsor Locks station and the maintenance electrician makes a periodic test of the equipment at his convenience. An average of three alarms per week are transmitted over this unit and there has been no failure in over four years of operation.

In the Central Division of the C. L. & P. Co. the device has been adapted to transmit readings from the Middletown gas plant to the Meriden service building, a distance of about twenty miles. The Middletown plant is attended during the day shift only and when the attendant goes off duty he closes the switch on the automatic device so that the readings of the height of the storage holder are taken for the remaining 16 hours each day by the attendant at Meriden building who calls the plant over the regular telephone system each hour and receives a code signal from which he tells the correct holder position.

The operation of the device is similar to the Windsor Locks one except that a drum type rotating switch actuated by wires attached to the holder lift determines the code sounded on the buzzer and a relay in the ringing circuit of the telephone sets the device in operation. Once the telephone relay starts the code ringer in motion it continues thru three cycles then resets for the next operation. The code is one long dash for each twenty feet of lift and one short for each two feet in between thus one long and five short tones would indicate thirty foot holder height.

One failure occurred in the device when the wire from the lift to the rotating switch was broken but the next reading called for from Meriden was so far out of line that a troubleman was dispatched immediately to the Middletown plant and found and corrected the broken wire.

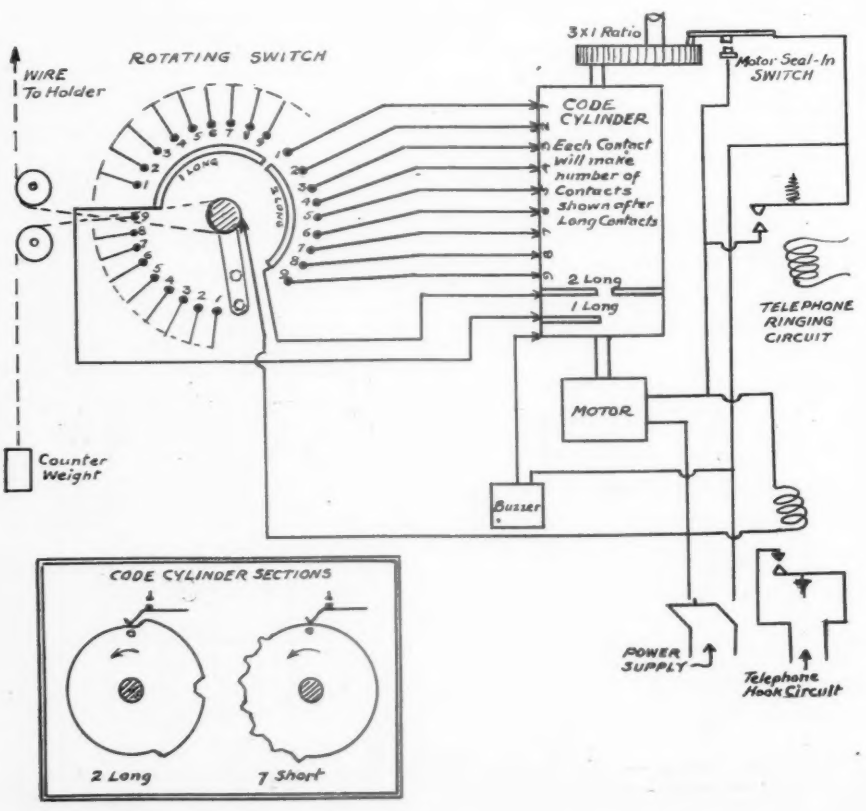
An addition to the present device is being made up for this installation so that during the winter months the temperature of the water in the holder cups will also be relayed. The holder height will be relayed by the code on the present buzzer followed by a code giving the temperatures sounded on a gong or bell. The alarm feature has not been used in this installation for the present due to the use of toll line facilities of the telephone company but may be incorporated when direct leased wire connection can be secured.

There are many different functions to which the device can be adapted. For example, the pumps at the Suffield Pumping Station are controlled by a mercury column control which makes a series of contacts depending on the height of the mercury column. By connecting these same contact points to a code ringing device and installing the telephone relay it will be possible to get the water pressure at any time by simply calling the telephone number of the pumping station.

This station is fully automatic and no attendants are on duty so that in case of power failure for example it is desirable to ascertain immediately the water pressure in order to dispatch a man to start the auxiliary engine if the pressure is low. This can be done from any telephone. A small time delay relay will allow the phone to ring several times if desired before the device cuts in so that ordinary calls can be made to the station when maintenance men are working there.

In each installation it is necessary to consider the facilities available to determine the uses to which the device can be put. Where private telephone lines or leased wires are available all the features can be readily used. Where dial systems or telephone company switchboards other than a P.B.X. and, as in the case of the Middletown installation, where toll lines are used the alarm feature is not recommended although automatic dialing devices are available there is always the possibility of busy lines that might prevent the transmission of an alarm. However, the cost of leasing wires or installing PBX extensions may be made up many times over in the saving in labor costs. At Windsor Locks if the device or some similar means of covering the station were not used it would be necessary to have twenty-four hour coverage by attendants. At Middletown two shifts of attendants have been dropped and only the day shift is now covered.

It has been proven here that automatic control backed by an alarm system or by remote readings will act more accurately and more dependably than manual operation and in most cases at greatly reduced costs, as one attendant at a central station can take readings and receive alarms from several outlying unattended stations and in case of trouble dispatch the proper trouble man or maintenance man to make the necessary repairs.



Schematic Diagram of Holder Height Device not using Control or Alarm Connections.

Presented at the Operating Division Meeting, The New England Gas Assn., Providence, R. I., May 22nd, 1946.

CLEAN GAS

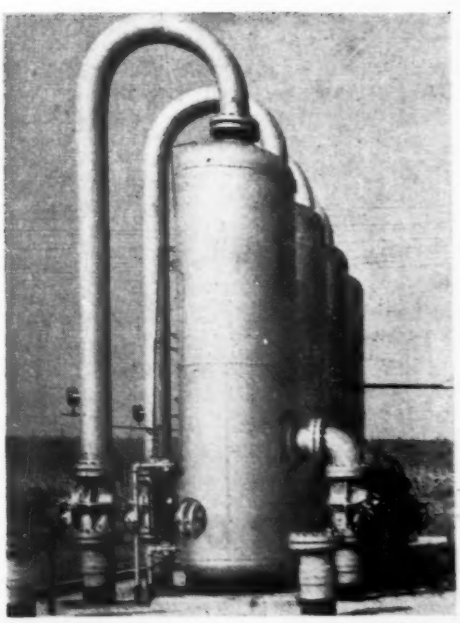
Cuts Service Complaints

Only clean gas will work in modern gas appliances with their delicate control mechanisms and small apertures. Blaw-Knox Gas Cleaners—at low initial cost and extremely small maintenance cost—will keep your gas free from trouble-making impurities. Investigate . . . and remember: Clean Gas Makes Satisfied Customers.

What Blaw-Knox Gas Cleaners have done for other gas companies they can do for you. Send for these records and for Catalogue 1869.

BLAW-KNOX DIVISION of Blaw-Knox Company
2070 Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington

BLAW-KNOX
GAS CLEANERS



Seven Blaw-Knox plants have been awarded the Army-Navy "E", and have regularly received renewal stars for continued high achievement in the production of war material.

RECENT COURT DECISIONS
Affecting Gas Utilities

Gas Company Employes Have Unusual Accidents

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

MODERN higher courts consistently hold that an employe may recover compensation under the Workmen's Compensation Act, if the injuries arose from an accident arising out of and, also, in the course of his employment. The term "arising out of" refers to the origin of the cause of the accident, while the words "in the course of employment" have reference to the time, place and circumstances under which the accident occurs.

Broadly speaking, an injury arises "out of" the employment, when there is a *causal* connection between the conditions under which the employe is required to perform his work, and the resulting injury.

For illustration, in Eargle v. South Carolina Electric and Gas Company, 32 S. E. (2d) 240, reported February, 1945, it was shown that a person named Eargle was employed by the South Carolina Electric and Gas Company, as a pump room operator, at its steam plant. Eargle had three routes from his home to the plant, first, to walk across a railroad trestle, second, to walk across the top of a dam, and, third, to cross the river in a boat.

One evening the employe was given special instructions to report for work the next day, which was Christmas, at eight o'clock A.M., as a member of an emergency shift. He left his home about 7:20 o'clock in the morning. Upon reaching the dam he found water running over it, which rendered it impassable. A dense fog hung over the river. Rather than take the long circuitous route by way of the railroad trestle, Eargle endeavored to cross the river alone in a boat. He failed to report for work that day, and after search his body and the boat were found below the dam. His dependents sued the gas company to recover compensation under the State Workmen's Compensation Act.

The lower court refused to allow compensation on the gound that the accident did not occur "within the scope of the employment." However, the higher court reversed this verdict, and in holding Eargle's dependents entitled to recover compensation, the higher court said that an important element of testimony in favor of the dependents was that the evening *before* the accident Eargle had been *specially* instructed to report for work on Christmas morning, a holiday. Thus the accident arose from the employment, due to unusual conditions.

Ordinary Travel

Under ordinary circumstances an employe going to or coming from his regular place of work is *not* engaged in performing any service incidental to his employment and, therefore, an injury does not arise out of and in the course of his employment. However, there are exceptions to this general rule of law although the employe has not been specially requested to report for work.

A review of late and leading higher court decisions discloses that an employe is acting in the course of his employment, and performing acts arising out of the employment, when his employer furnishes transportation going to and returning from work, or the time that is consumed by the employe in going to or from work is paid for by the employer, or where the employe, on his way to or from his work, has some duty in connection with his employment.

It is well established law that an injury is compensable under the State Workmen's Compensation Act when sustained while an employe is traveling over a road constructed and maintained by the employer. (See Gallman, 22 S. E. (2d) 718.)

Also, the law is well settled that an injury is compensable when sustained while an employe is going from one place of work to another. See Covington v. Atlantic, 158 S. C. 194, and Bountiful Company v. Giles, 276 U. S. 154.

Positive Proof Necessary

If an employe is injured while protected by State Workmen's Compensation Act he is entitled to recover compensation where the injury is sustained in the course of the employment, although the injury resulted from negligence of the employe. However, the legal situation is entirely different with respect to an employe, or other person, who sues a gas company to recover damages for an injury.

For example, in Campbell v. Michigan Consolidated Gas Company, 21 N. W. (2d) 181, reported March, 1946, it was shown that a pedestrian brought suit against the Michigan Consolidated Gas Company to recover damages for an injury. She alleged that the injury was caused solely because of the negligence of the gas company, when she was tripped by a piece of metal protruding from the foot or base of a compressor. At the time the sidewalk of the avenue was crowded. The gas company and other utilities also were laying conduits. Also, the testimony showed that the compressor was on the sidewalk but that there was a barricade painted with red stripes around it. In holding the gas company not liable, the higher court said that the pedestrian failed to positively prove that the injury resulted from negligence of the gas company or its employes.

On the other hand, a jury may reasonably deduct from the testimony that an injury resulted from negligence of the gas company employes and render the company liable, providing such testimony is relatively positive. Otherwise, the higher court will reverse the decision.

For instance, in Robinson v. Peoples Gas Light & Coke Company, 64 N. E. (2d) 556, reported March, 1946, the testimony showed that a gas company employe in a sales room opened a folding chair and asked a customer to sit down. The chair collapsed causing him to suffer injuries. Although the jury held the company liable in damages, the higher court reversed the verdict.

Higher Court Approves Jury

Generally speaking, a higher court will approve a verdict rendered by a jury, unless the testimony clearly indicates that the decision was erroneous.

For example, in Safety Casualty Co. v. O'Pry, 187 S. W. (2d) 578, reported June, 1945, it was shown that an employe was engaged in setting a blind in a gas pipe. Some bolts were unscrewed and while the two joints of pipe were momentarily open some gas, acid and fumes of gas came from the pipe. He breathed some of these fumes and immediately was severely affected by it. He had trouble breathing, began to cough and burn and could not see, went into the outside air and attempted to vomit. Eighteen months later a sputum examination of the employe showed the presence of many tubercular germs. He sued to recover compensation under the State Workmen's Compensation Act. In holding the employe entitled to a recovery the higher court said:

"From the foregoing testimony, we believe the jury was warranted in finding that the appellee (employe) received an accidental personal injury in the inhalation of the gas and fumes, and that such inhalation of the gas and fumes was the producing cause of his tubercular condition and consequent disability."

Employee Knocked from Truck

According to a late higher court decision an employe is within the scope of his employment when riding on his employer's motor truck, if the evidence shows that other employes were accustomed to ride on the truck, and the employer had not forbidden his employes to do so.

For illustration, in Smoot v. Britton, 152 Fed. (2d) 17, reported February 1946, it was shown that an employe, named Wills, had seen other employes riding on the running board of trucks. One day after quitting time Wills was on his way to an exit of his employer's premises when he jumped on the running board of a dump truck, intending to hitch a ride. He was brushed from running board by a post and was injured. In view of these circumstances the higher court held Wills entitled to recover compensation under the State Workmen's Compensation Act. This court said:

"Although the truck was not provided by the employer as a means whereby employes might reach the exit to the premises, the employer had never expressly forbidden its use by employes for that purpose."

Also, see Smith v. Industrial Accident Commission, 18 Cal. (2d) 843, where an employe boarded a truck of his employer en route to the exit of the premises, although the truck was not furnished for that purpose. The employe jumped off the truck while it was in motion. This court held that the injury arose within the scope of the employment and allowed the injured employe compensation under the State Workmen's Compensation Act.

Proof of Intoxication

Modern higher courts consistently hold that there should be accorded to the Workmen's Compensation Act a broad and liberal construction. Doubtful cases will be resolved *in favor* of compensation to the employe or his dependents.

For example, in Elm County et al. v. Sullins, 180 S. W. (2d) 113, reported June, it was disclosed that a truck driver was killed when he wrecked the truck. A fellow employe testified that "We were talking and I was trying to get him to let me drive. I knew he had been drinking. He drove across the line two or three times and I got him to stop."

Dependents of the deceased sued the employer for compensation. In rendering its decision in favor of the dependents, the higher court said:

"The burden is clearly upon appellant (employer) to show, by the testimony, that Sullins' death resulted solely from his intoxicated condition."

Not Within Bankruptcy

Many persons erroneously believe that a discharge in bankruptcy eliminates all debts. However, this is not true.

For example, in Saueressig v. Armour, 16 N. W. (2d) 417, reported January, 1945, the testimony proved by the court that a driver of a motor vehicle was "in a drunken condition and in a reckless, wilful and wanton disregard of the safety of others," when he seriously injured a pedestrian.

The injured pedestrian sued the driver and also his employer for damages and was granted a judgment of several thousand dollars against the driver. The latter took benefit of bankruptcy, believing he could avoid this money judgment. Later the injured pedestrian filed a garnishment suit to require payment by the employer a lawful percentage of the driver's wages until the judgment was satisfied.

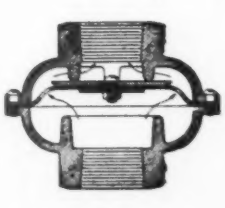
The driver appealed to the higher court on the contention that his discharge in bankruptcy eliminated all debts owed prior thereto.

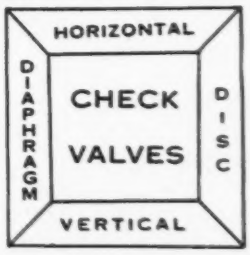
The higher court refused to agree with this contention, saying:

"It could hardly be contended that a judgment for death by wrongful act against Montgomery (employe) would be discharged by a discharge in bankruptcy."

Also, see Tinker v. Colwell, 193 U. S. 473, where the Supreme Court of the United States said that wilful and malicious injury does not necessarily involve hatred or ill will, but arises from a wrongful act, done intentionally, without just cause or excuse.

Pressure Controls for Gas and Air





NORWALK VALVE DIVISION, ALLIED CONTROL VALVE COMPANY

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Rate Revisions in California

THE California Railroad Commission has ordered the Pacific Gas & Electric Co. of San Francisco to institute rate revisions lessening its gross revenue by approximately $3,500,000.

The action was predicated on the Commission's contention that reduction of gas rates is warranted by the increased revenues utilities in general have been earning, and will probably continue to earn for some time to come.

Additional significance was attached to the PG&E Decision in the Commission's admission that, in its opinion, one of the important factors making a rate reduction plausible was the new Federal tax law which became effective January 1, 1946, whereby excess profits and capital stock taxes are eliminated and normal and surtax substantially reduced. This the CRC emphasized, is one of the important factors tending to increase substantially the net operating revenues of utility firms.

Second Rate Case in Los Angeles

In April the State Railroad Commission also conducted hearings in the State Building, Los Angeles, in another gas rate case in which Southern Counties Gas Co. of Los Angeles was asked to show cause why a CRC-proposed plan for automatic rate reduction should not be effectuated.

The decision in the PG&E case (D-38,638) was the outgrowth of a series of meetings which began in December, 1944, and held intermittently on 46 different days.

The proceedings of those hearings and the decision based on them are of more than local interest because wide industry attention attaches to the significant comments made by the CRC concerning future trends in the California gas industry, its views regarding the field cost of gas after removal of OPA restrictions, and the exposition of the regulatory body's policy in respect to using huge present revenues and probable future continuation of large income as a warrant for downward revision of gas rates.

The action taken by the Commission in the PG&E case looms as a precedent indicative of the position it will assume toward the existing rate structures of other gas companies within its jurisdiction, with the pending proceedings against Southern Counties Gas Co. being a case in point.

Rate Zoning Plan Approved

In a prior decision relating to gas tariffs of the PG&E (D-36,082), certain definite basic rate structures, and a plan for rate zoning were adopted. The principles set forth in that decision were ordered carried forward in the present case (D-38,638).

Testimony presented at the hearings in the present proceedings showed that the company's witnesses were in general accord with the principle of the plan outlined by the CRC. The Commission's witness, in making his recommendations, indicated that a part of any rate reduction might be made in the form of discount rates.

The decision, however, stated that the CRC, having in mind the changed conditions as well as the magnitude of the reductions, had reached the conclusion that a discount form of rate was unnecessary. After giving careful consideration to the record and inherent conditions relative to those matters, the Commission announced it had concluded the following treatment of the various classes of service performed by the PG&E was fully warranted and that the resulting rates would be reasonable.

"The general service tariffs (the CRC order stated) provide for both base and effective rates. The following tabulation indicates the base rates ordered in the decision that are applicable to each of the six principle zones. These rates are predicated upon a service of natural gas having a heating value of 1100 b.t.u. per cubic foot. In addition, for all use in excess of 20,000 cubic feet per month, the effective rates are geared to the posted price of fuel oil.

The Commission stated that population was but one of the factors considered in zone classification and was set down merely as a convenience for descriptive purposes. The cities and communities shown in the table, it was stated, are not necessarily all-inclusive but serve merely as a guide to the class of areas included.

Customer Bill Reduced 10.3%

The decision pointed out that since the general service group represents the backbone of the company's business in gas, accounting for over 99% of the customers served, substantially all the rate reduction has been accorded to that group. In total amount this represents approximately $3,485,000, which reduced customer billings on the average of 10.3%.

Proposals were made by the PG&E that would have combined the firm's industrial and general service schedule into a single schedule. The CRC announced that while the plan had some advantages, it is believed more desirable to maintain the currently effective series of schedules for firm industrial service. As these schedules now are filed, the first 100,000 cubic feet per month must be computed from the rates of the applicable general service schedules.

In an analysis of the company's existing rates for commercial building heating service, the Commission conceded that the rates were too low but ruled that, inasmuch as this

Zone No.	Description	First 300 Cu. Ft. or Less		Base Rate—Cents Per 100 Cu. Ft.				
		Inc.	Uninc.	Next 2,200	Next 7,500	Next 10,000	Next 80,000	Next 100,000
1	San Francisco and Daly City	$0.65	...	3.8c	3.7c	3.6c	3.5c	3.2c
2	Bay Cities, East	.70	.80	3.9	3.8	3.6	3.5	3.2
3	Cities of 50,000 to 100,000 Pop.	.75	.85	4.2	3.9	3.6	3.5	3.2
3.1	Fresno	.68	.85 & .90	4.6	3.9	3.6	3.5	3.2
3.2	Bakersfield	.70†	.85†	6.25*	4.2	3.75	3.65	2.6
4	Cities of 5,000 to 50,000 Pop.	.80	.90	4.5	4.1	3.7	3.5	3.2
4.2	Marysville-Chico	.80	...	6.8	4.8	4.0	3.6	3.3
4.3	Eureka, Arcata	.85	1.05	10.0	6.0	5.5	5.0	4.5
5	Cities under 5,000 pop.	.85	.95	4.8	4.3	3.8	3.5	3.2
5.2	Biggs, Colusa, Oroville.	.85	...	6.8	4.8	4.0	3.6	3.3
5.3	Willows	.90	1.00	8.0	7.0	5.5	4.0	3.5
6	Rural Areas	...	1.05	5.0	4.5	4.0	3.5	3.2
6.2	Rural Areas, Special	...	1.05	7.8	4.8	4.0	3.6	3.3

† Minimum charge per meter per month. * For first 2,500 cu. ft.

group of customers was not specifically notified that evidence relating to increases as well as decreases in rates was to be received by the CRC, the decision stated that no action raising rates would be undertaken during that proceeding.

In ordering the reductions made in the general service group schedules, the Commission stated it had considered the sharply rising levels of operating costs as well as many of the uncertainties of the future. The Commission set forth that, in its opinion, a rate reduction lessening gross revenues by not less than $3,500,000 should be made and that such a reduction would leave the firm in an earning position sufficient to meet its financial requirements and provide not less than a reasonable return on the fair value of its gas properties devoted to and necessary for the rendering of public utility gas service.

Commission Views Future Trends

How the California Railroad Commission views the future of the gas industry in the state and the trends in revenue that may be looked for was set forth in the decision under the heading "Future Trends." While the opinions expressed were based on testimony adduced in the PG&E case hearings, much of the matter is of general interest.

"Since the rate changes resulting from this proceeding will be effective in the future," the CRC stated, "it is imperative to view briefly some of the changes in earnings which may be anticipated. We take judicial notice that the close of the Pacific War came earlier than was generally expected, thereby advancing the reconversion from a war to a peace time economy, and also the tax change herein mentioned.

"The trend in revenue from sales to domestic and commercial customers is still upward. Indications point to a continued growth in population and in the number of customers served. On the other hand, certain industrial gas sales used in military and war production establishments are being decreased and will be further curtailed and, in some instances, stopped altogether. . . . Much of the curtailed service applies to low-rate revenue loads and, after giving consideration to the savings in gas purchased and in taxes, the effect on net revenue will be small. Similarly, new business that is replacing this loss carries a much higher rate and results in a proportionately higher net earning.

"After considering the many factors that will affect the trend in gas revenues, it is our view that though there may be some minor periods of decline, the general trend is upward for firm gas service (predicated on present rate levels). There should be small change in industrial sales on a surplus basis in the more immediate future."

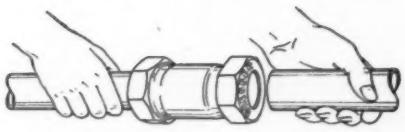
The Commission stated, further, that operating expenses, exclusive of taxes, in the future will be sharply higher; that the field cost of gas to the company will be higher when the Office of Price Administration removes its restrictions. It pointed out, however, that this change will be offset initially by a concurrent increase in the industrial gas sales rates in accordance with fuel oil clauses in each such tariff, and that, in addition, the basic or floor price of gas paid to producers has been increasing.

Increases Outweighed by Tax Savings

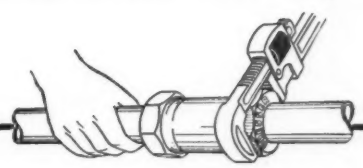
After citing the new Federal tax law pertaining to excess profits and capital stock taxes as a factor in increasing net operating revenue from now on, the Commission stated:

This half-minute joint

gives



permanent protection



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"After considering that there will be increase in the types of expense shown above in the near future, it is concluded that these increases will be more than outweighed by the savings in taxes and that a greater net revenue may be expected in 1946 than is apparent in the figures shown for 1945."

The investigation into the rates of PG&E was initiated by the State Railroad Commission on its own motion. The company took the position that the earnings from its gas department were neither excessive nor unreasonable and asked for dismissal of the case. Representatives of the city and county of San Francisco appeared at the hearings to support the establishment of lower gas rates.

Testimony was presented to show that the PG&E service is provided in all or parts of 46 California counties; that its gas department had gross operating revenues of $47,929,003 in 1944 and served 744,402 customers with gas; that during the calendar year 1944 the utility's total gas sales were in excess of 160,000,000 MCF. The following tabulation was submitted to indicate the disposition of such sales and the average paid by classes of service:

Classification	Sales MCF	Sales Per Cent	Average Revenue Per MCF
Firm sales:			
General service	61,192,815	37.8%	51.7c
Commercial building heating	8,033,011	5.0	28.7
Resale	667,139	0.4	26.1
Special industrial	11,663,744	7.2	23.0
Sub-total firm sales	81,556,709	50.4	45.1
Surplus and interruptible	43,806,197	27.1	14.4
Total sales to customers	125,362,906	77.5	34.4
Interdepartment sales:	36,428,555	22.5	12.7
Total gas sales	161,791,461	100.0%	29.5c

Operating and Revenue Figures

After giving due consideration to all claims and elements that it regarded as proper and fair for inclusion in a rate base, the CRC stated it decided it was fair to adopt as the rate base for the average year 1945 the amount of $149,000,000 stating that:

"In the discussion relating to the results of gas operations for the years 1944 and 1945, the Commission's adopted figures for 1945 are to be taken as a fair basis upon which to determine the reasonableness of rates for a future period in the light of changed condition."

Because of the close agreement of the estimates of gross revenue figures made by the company and commission representatives, an adjusted gross revenue figure of $47,664,000 was adopted by the CRC for rate assessment purposes.

The decision incorporated the adjoining tabulation in which there are brought together the basic figures presented at the hearings, along with the estimated net revenue and rate of return for 1945:

For the year 1944 the adjusted rate of return as computed by the company was 5.95 per cent and that by the Commission staff 6.55 per cent.

Southern Counties Case

Hearings in the Southern Counties case began at Los Angeles on March 14 and continued intermittently until mid-April, when the accumulated testimony was submitted to the commission as a whole for consideration. The hearings were conducted in the State Building, Los Angeles. L. H. Anderson, Commission president, and Commissioners Harold P. Huls and Frank W. Clark conducted the hearings. The CRC proposals were outlined by Roy Wede, assistant director of public utilities.

The hearings were called on the CRC's own motion to consider a proposal of the Commission's Gas Engineer, Lloyd Cooper, to determine whether a 7½ per cent discount in the company's rates, which was to expire on March 31, and which was ordered in December, 1944, should be continued or a new discount plan substituted.

Mr. Cooper proposed that the 7½ per cent discount figure be accepted as a minimum and that further discounts be given consumers in view of expected higher net revenues anticipated for the company in the current year.

Under the proposed Cooper plan, a sliding scale of discounts based on net earning revenues would become effective and would be subject to quarterly revisions. The plan was worked out by Mr. Cooper in a series of conferences with gas company engineers with a view to adopting it on an experimental basis for one year. The Commission claims that increased net revenues for the gas company showed indications of increasing still higher in the coming year and declared that as the earnings increased, the proposed discount, if ordered into effect in a subsequent decision, would show a comparable increase and bring cheaper gas to the consumers.

Object of the plan, the Commission disclosed, is to adjust rates to earnings as a means of meeting changing conditions during the reconversion period. Under the proposed plan, a test will be made every 90 days to determine net revenues for the preceding 12 months period.

If these revenues differ by more than $50,000 above or below the criterion revenue, which has been set at a predetermined figure, customers' rates will be adjusted accordingly. An additional 6% return will be allowed for on net operative additions to capital. If approved by the CRC in its final decision, the plan is to remain in effect until earnings tests under the new adjustment program, show that changes are required.

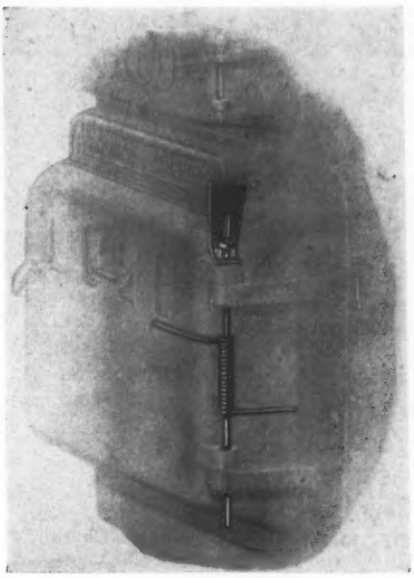
(Concluded on page 57)

Item	Company Estimate	CRC Staff Estimate	Adopted
OPERATING REVENUE	$47,612,000	$47,716,149	$47,664,000
Operating Expenses			
Total operating expenses exclusive of taxes and depreciation	21,218,000	21,239,037	21,283,000
Taxes, excl. Fed. income	3,244,000	3,241,100	3,242,000
Taxes, Federal income	11,462,000	10,703,600	11,295,000
Total Taxes	14,706,000	13,944,700	14,537,000
Depreciation	2,561,000	2,557,981	2,488,000
Total Operating Expenses	38,485,000	37,741,718	38,308,000
NET REVENUE	9,127,000	9,974,431	9,356,000
RATE BASE			
Average Year	$152,623,000	$147,531,000	$149,000,000
BASE OF RETURN	5.98%	6.76%	6.28%

THE INLAND DOOR CLOSER

DESIGNED for CONVERSION BURNERS

OVER 50,000 IN USE



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Codes and Standard Practices Covering Installation of Gas Appliances

By

H. W. Geyer

Southern Counties Gas Company
of California

Items of major interest in appliance installation codes are reviewed. Comments on codes currently in use illustrate these points. A bibliography of such codes is given in the Appendix.

THE INSTALLATION of gas appliances is regulated in different communities through building codes, plumbing codes, gas codes, miscellaneous ordinances or gas company rules. In some cities the various gas appliances are regulated by different ordinances, enforced by different departments.

The Enabling Act in California and some other states permits adoption by cities of codes prepared in book form. The great saving in legal publication costs has made this procedure attractive, particularly to the smaller cities.

Groups of public officials have organized themselves into associations for the purpose of drafting so called standard or uniform codes. Some of these organizations have standing committees for the purpose of preparing revisions in the light of technical developments. Such revisions are then incorporated periodically in new editions of the codes. Other groups also issue codes but do not have standing committees for periodic revisions.

The growth of this code standardization activity has brought out the realization of the numerous discrepancies and conflicts in existing practices and regulations. Most of the older codes include arbitrary rule of thumb provisions. Current thought is directed toward revising such regulations by replacing them with results of research studies and tests. This brings about desirable standardization in dimensions, areas, spacings, and other technical factors. An added advantage is found in the simplification as well as standardization of job training procedures for installation and service men.

Administrative Rules

With the standardization of technical factors, there becomes more evident the lack of uniform rules on matters relating to trade practices and policies. I refer to the question of who may be permitted to install and service gas appliances.

Some codes confine their rules solely to technical regulation of appliances and their installation. No reference is made to licenses, permits, qualifications of installers, and similar administrative questions. Others, particularly the usual types of plumbing codes, refer only to installation and repair by licensed plumbers, omitting any reference to installation by gas appliance dealers.

A very few codes recognize the classification of Gas Fitter as an individual who installs, repairs, and services gas piping and gas appliances. As an example of a new development, the City of Los Angeles recently adopted an ordinance establishing the classification of Warm Air Heating Contractor and Journeyman Warm Air Heating Installer.

Other problems which have arisen in the past, and which will become more pressing in the near future, are those relating to the qualification and classification of men who service electrical controls on gas appliances, and those who install and service gas-fired air conditioning equipment. Since most of the present regulations do not provide for the latest technical developments in gas appliances, it may be theoretically necessary to qualify a gas company service man as a plumber, electrician, heating installer, and refrigerator repairman. Evidently, this situation needs further study and combined action by our industry if the installation and servicing of gas appliances are not to be surrounded by burdensome handicaps.

Current Problems

The latest and best known codes commonly in use on the West Coast are cited in the Appendix. They should be consulted for detailed current provisions. Subjects which should be given most attention in the future are mentioned below because their regulation is apparently not well understood either within or outside of the gas industry.

a. **Range Connectors.** The adoption of very close fitting cabinet construction in kitchens brought about the introduction of flexible metal gas range connectors. These connectors have factory applied union connections at each end and are installed with a shut-off valve between the house piping and the connector. They are of bellows-type construction, the metal being brass, bronze, or steel. Without the use of such a flexible connector it is very difficult to make a safe gas-tight piping connection using only iron piping. Yet, few codes now provide for other than a solid pipe connection.

b. **Flush-to-Wall Ranges.** With respect to gas ranges, the introduction of flush-to-wall models requires an understanding of their correct installation. Spacing from walls and sides should conform to the type of range and the specifications of the A.G.A. Installation Requirements for Gas Appliances.

c. **Kitchen Ventilation.** The requirement of mandatory venting of the range oven should be reexamined. Studies of the ventilated gas kitchen will bring about changes in appliance installation, and the ventilation of kitchens which require new techniques and regulations.

In West Coast areas, it is often customary to install the water heater in (or adjacent to) the kitchen. With the introduction of mechanical ventilation in a closed kitchen, a down-draft condition in the water heater vent might be created. This subject requires further study.

d. **Venting of Gas Water Heaters.** The gas water heater is a well standardized appliance. Yet, it is an open question whether the water

heater vent should be interconnected with any other vent, say that of the furnace. Recent studies of the multiple venting of several water heaters show that the vent requirements of such an installation are apparently quite different from those of a multiple vent serving a number of gas furnaces.

e. **Air Supply.** One of the most neglected subjects is that of providing a permanent and adequate air supply for combustion and ventilation. This is particularly true of furnace installations. The source of combustion air should not be subject to accidental interruption or curtailment by the users of the furnace.

Neither should it be possible to adversely affect the flow of circulating air so as to bring about either a fire hazard or mixing with flue gas.

f. **Accessibility.** More attention should be directed to accessibility of appliances. Installation costs go up rapidly as appliances are built in to a greater degree. When the need for repairs or service adjustment arises, lack of accessibility causes unnecessary expense.

Ease of lighting pilots or adjustment of controls by the user should also be considered. Only the very latest codes contain provisions which discourage installations inaccessible for normal adjustments.

Conclusions and Recommendations

Associations of public officials, in general, are quite receptive to suggestions for improvement in local codes. All requests for assistance should be most carefully considered and answered. In preparing drafts of suggested revisions or additions, a balanced view of the situation should be taken. Regulations should neither be unduly restrictive to the sale and installation of gas appliances, nor should such essential matters as safety of construction, installation, and operation be neglected. This can be accomplished by consultations between Operating and Sales Departments so that the viewpoint and responsibility of both groups will be represented.

Due weight should be given to the problems of gas appliance dealers and their position as an essential element of our industry. No provisions should be considered which would arbitrarily restrict the installation of appliances to any one trade or group. Any individual or firm which can qualify by complying with reasonable ordinance provisions should be granted the privilege of engaging in all phases of the gas appliance business.

All code or ordinance subjects which lend themselves to research and test should be regulated in accordance with test results. Where nationally recognized standards or rules exist, such references should be given due weight.

Close coordination should be maintained between gas company departments responsible for sales, operations and service. Developments in gas utilization research are numerous and proceeding rapidly. Marked changes will result in installation and servicing practices. Acquaintance with coming developments will permit advance planning, so that codes, practices and viewpoints will be in good agreement.

APPENDIX

1) **Uniform Building Code, 1946 Edition**
Pacific Coast Building Officials' Conference, 124 W. 4th St., Los Angeles 13
Chapter 37 of this code governs the construction of chimneys, fireplaces, and vents, as well as kitchen ventilation.
Chapter 51 contains detailed requirements for the installation of heating appliances, their location, and a provision for adequate air supply.
This code in its previous editions has been adopted by over 400 cities in 34 states and some foreign countries. No administrative provisions are made for licensing or qualification of dealers or other installers.

2) **Standard Gas Code, 1938 Edition**
Pacific Coast Plumbing Officials' Association (now Western Plumbing Officials' Association) 4733 Templeton St., Los Angeles 32, California
This code contains detailed regulations governing the sale, installation, maintenance, and repair of all types of gas appliances and house gas piping. It also provides for the issuance of permits and the licensing of persons engaged in the business of installing, etc., gas appliances. Provision is made for the gas appliance dealer.

3) **Uniform Plumbing Code, 1946 Edition**
Western Plumbing Officials' Association, 4733 Templeton St., Los Angeles 32, California.
This is principally a plumbing code which contains one chapter (Chapter 15) dealing with gas fitting, gas water heaters, and gas water heater vents. All persons installing such equipment must be licensed.

4) **Building Code**
Recommended by the National Board of Fire Underwriters, 1943 Edition, 85 John Street, N. Y.
This building code contains provisions regulating heating appliances, heating, ventilating, air conditioning, as well as flues and vents for such appliances, and gas piping.

5) **American Gas Association Requirements and Recommended Practice for House Piping and Appliance Installation,** 1940 (first reprint January, 1945), American Gas Association, 420 Lexington Ave., N. Y. 17, N. Y.
These requirements, through adoption by gas companies, have practically the force of law in many eastern cities. They contain general requirements on house piping, on appliance installation, and are particularly detailed in their regulations on the installation of the various types of uninsulated, insulated, and flush-to-wall gas ranges.

6) **Municipal Code of the City of Los Angeles, California**
In this municipal code are major sections which are commonly referred to as the "Plumbing Code" and "Heating Code." These ordinances contain the most advanced and detailed regulations dealing with the installation of water heaters, vents, heating appliances, flexible metal appliance connectors and the licensing of gas fitters as well as warm air heating installers.
Some technical sections of the heating code are still in the process of being legally adopted in the form of an ordinance.
According to present law and practice all regulations in this municipal code are reviewed once each year, and are brought up to date with technical developments and field experience.
Copies of the Los Angeles Plumbing Code are obtainable from Western Plumbing and Heating Journal, 3665 So. Vermont Avenue, Los Angeles 7, California. Inquiries on the Heating Code should be sent to the Heating Division, Department of Building and Safety, City Hall, Los Angeles, California.

Presented at the Utilization Conference, Pacific Coast Gas Association, Sacramento, California, April 24 and 25, 1946.

Hammel-Dahl Co. Appoints W. B. Farley District Mgr.

The Hammel-Dahl Company of Providence, R. I., manufacturers of automatic control equipment, has appointed Wayne B. Farley as District Manager of their Pittsburgh Office.

Mr. Farley has assumed complete responsibility for sales in the Pittsburgh trading area, comprising West Va., Eastern Ohio and Western Pa. For the three years prior to joining the Hammel-Dahl organization, he was Chief Plant Layout Engineer for the Blaw-Knox Co. of Pittsburgh, Pa. During the pre-war years, Mr. Farley headed the Hydrocarbon Department of the Austin Co., who built a large plant for Dow Chemical Co. at Freeport, Texas.

Large Volume Water Heating

A series of articles for the Engineer, the Architect, the Salesman and the Contractor.

They show how to select and install correct types of Water Heater Systems for specific purposes.

By

Malcolm B. Mackay

The Burkay Company

CHAPTER IV

Part 3

HOT WATER DEMAND

General

(1) There is ample evidence—confirmed by an analysis of surveys of literally scores of water heating installations—that failure to understand or apply the correct basic factors of hot water demand is the principal, responsible cause of unsatisfactory performance or failure to provide hot water at the required temperature or in adequate volume. It is equally apparent that an attempt to reconcile a hot water demand factor, expressed in terms of *gallons per day,* with water heater recovery (water heating) capacity, expressed in terms of *gallons per hour,* will generally result in the installation of equipment which is incapable of supplying the required volume of hot water or of maintaining the required, minimum temperature.

For example—a water heater having a recovery capacity of 50 gallons of 140° water *per hour*—raised 80° F., from 60°—would be *capable* of heating 1200 gallons of water to the required temperature during a period of 24 hours but would be *incapable* of supplying a demand for 200 gallons of 140° F., water occurring during *each of six, separate, single hours* of a like period of one day or a like total demand of 1200 gallons.

(2) Since a water heating system *must* be capable of supplying a specific demand for hot water at a rate equivalent to the rate at which the hot water will be required during the period in which the demand will be at the maximum and, as the capacity of the water heater is customarily expressed in terms of *gallons per hour,* it is self evident that hot water demand *must,* likewise, be visualized or expressed in terms of *gallons* of hot water which will be required during the *hour of greatest, or peak, demand.*

(3) Adoption of the *peak demand hour* as the basis for evaluating hot water demand will prevent the possibility of failure to provide adequate Water Heating Capacity and/or Hot Water Storage Capacity to meet a specific hot water requirement as it will be apparent that a system having sufficient capacity to supply the *maximum demand* which will occur during any, given *hour,* will be capable of supplying the *lesser demand* which may occur during any other hour of the day.

(4) The hot water demand of the various types of requirements will accordingly be interpreted or expressed in terms of *peak hour demand* except where the hot water is to be supplied by an instantaneous water heater operating to raise the cold water supply to the required temperature or operating as a booster heater to raise already, or partially heated water to a higher temperature as explained in Chapter I, Section 1.

(5) The extent to which the reserve of heated water in the storage tank (excepting instantaneous water heaters) may be depended upon to supply a portion of a peak demand for hot water, which may be in excess of the recovery capacity of the water heater, is inversely proportional to the length of the period during which the demand continues at the maximum, or peak rate, i.e., as the *length* of the period of peak demand *increases* the proportionate part of the stored reserve of hot water which may be used to assist in meeting such peak demand during a given hour, *decreases.* The following may be employed as a guide in this connection.

(a) The hot water demand during a *single, non-recurring* peak hour should *not* exceed the recovery capacity in *gallons per hour—plus* 70% of the storage capacity—in gallons—of the tank.

(b) An equally heavy peak demand, recurring during 2 consecutive hours, should *not* exceed the *hourly* recovery capacity of the heater—in gallons—*plus* 35% of the storage capacity—in gallons—of the heater during *each* of the 2 hours.

(c) An equally heavy, peak demand, recurring during 3 consecutive hours, should not *exceed* the *hourly* recovery capacity of the heater—in gallons—*plus* 25% of the storage capacity of the tank—in gallons—during *each* of the 3 hours.

(d) An equally heavy, peak demand, recurring during four consecutive hours, should not *exceed* the hourly recovery capacity of the heater—in gallons—*plus* 18% of the storage capacity of the tank—in gallons—during *each* of the 4 hours.

(e) An equally heavy, peak demand, recurring hourly for *more* than four consecutive hours, should not *exceed* the hourly recovery capacity *only,* during *each* of 5 or more, hours.

(6) The capacity of a recovery water heating system should be such that the equivalent of *not more* than 75% of the stored reserve will be used to meet a peak demand occurring during a *single* hour or existing for a period of two or *not more* than four consecutive hours of peak demand.

If *less* than the equivalent of 30% of the potential stored reserve remains unused after a period of peak demand existing for one or for *not more* than four consecutive hours, *either* of two following described conditions will exist:

(a) The depleted reserve of hot water will be inadequate to supply a short, but heavy demand which may occur during the first 10 or 15 minutes immediately following an hour of peak demand. Under such circumstances the temperature of the available reserve of hot water will be materially lower than required, or—

(b) The average temperature of the entire reserve supply will be *below* the required minimum until such time as the excess of recovery rate over the hot water consumption rate will have again raised the stored reserve in the tank to the required, minimum temperature.

(c) It must be remembered in this connection that—as hot water is drawn from the upper zone of the storage tank and is replaced by cold water entering the lower zone—the hot and cold water do not "mix" to any appreciable extent. As a consequence a continually *increasing stratum,* or belt, of cold water accumulates in the lower zone while the belt of hot water in the upper zone *decreases* proportionally in volume. As a result of this principle, approximately 70% of the contents of a tank of stored, hot water may be withdrawn before the temperature of the water delivered to the fixtures will drop more than 8°, or 10° F. Those figures covering the extent to which the stored reserve may be used to supply a peak demand for hot water which exceeds the recovery capacity of the heater, as shown in previous paragraphs are predicated upon this fact.

Demand and Capacity

To promote a better understanding of the related problems of Hot Water Demand and Water Heating System Capacity—both recovery and storage—it is helpful to visualize them in terms of a Bank, Commercial Checking Account.

(a) The *minimum* balance which must be maintained in checking account represents the minimum *volume* of hot water which must be maintained in a water heating system.

(b) The *actual balance* in a checking account at a given time represents the *capacity* of the hot water storage tank, when full.

(c) Deposits in the checking account represent the *volume* of water which the heater is capable of recovering, or heating, during any given hour.

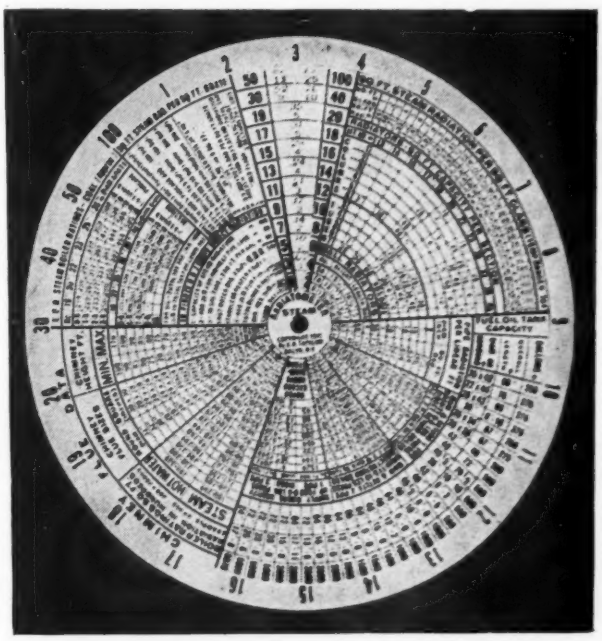
(d) Withdrawals of money from the checking account may be compared with the volume of hot water which will be *required* during any given hour.

(e) Operations are started with the storage tank full of hot water at the required temperature—or "Actual Balance" . . . 200 Gallons.

(f) During the first hour the water heater will recover, or heat—"Deposit" (add) 120 Gals.

Quick, Accurate Answers for Heating and Water Heating Jobs solved by the

Heat-O-meter



Direct readings appear on the Heat-O-meter, covering factors entering into all heating calculations.

The Heat-O-meter employs three concentric celluloid printed discs. Outside disc, 6¼" diameter, is printed in red on both sides. The inner discs are printed in black with a cut-out V sector.

It covers sizes of mains, returns, risers, radiator sizes and capacities, round and sectional boiler net ratings, chimney flue sizes, capacities and heights. Also hot water and fuel tank sizes and capacities, hot water generator capacities, etc.

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(g) The total, available, hot water during this first hour, or "Credit" would be (total) 320 Gals.

(h) Based on the fact that the equivalent of 30% of the stored reserve of hot water should remain unused at the end of any period of peak demand, the *"minimum* balance" which must be maintained in the tank would be (deduct) 60 Gals.

(i) Subtracting the *"minimum* balance" of 60 gallons from the "total available" of 320 gallons gives the *maximum* number of gallons which should be used during a *single hour or*—260 Gals.

(j) Were a peak demand for 400 gallons to occur during this hour, it is apparent that the system would be unable to supply it and that the "Account" would be *"over-drawn"* to the extent of—80 Gals.

As we are primarily concerned with the problems of large volume, or "Commercial" water heating it is desirable to define "Domestic" service as that in which the peak, hourly, demand for hot water does not exceed 75 or, at the most, 100 gallons while "Large Volume" water heating may be considered as that in which the demand for hot water, during a single hour, will *exceed* 100 gallons.

Large Volume or Commercial Hot Water Demand may originate from any *one*, or a *combination* of the following basic sources:

(1) Mass Feeding.
(2) Mass Housing.
(3) Industrial Processing.

It would be difficult, if not impossible, to conceive of a specific hot water demand which could not be classified under one, or more of the above group.

(4) Although segregated or mass toilet facilities such as those in Dormitories, Institutions, Gymnasiums, Clubs, etc., might be listed under a *fourth* classification, the *demand* characteristics so closely parallel those of mass housing that they may be included in that group.

(5) The hot water demand originating in Hotels, Apartments, Dormitories, Office Buildings, Schools, Clubs and other sources where the hot water is required principally for personal toilet use may be classified under *mass housing.*

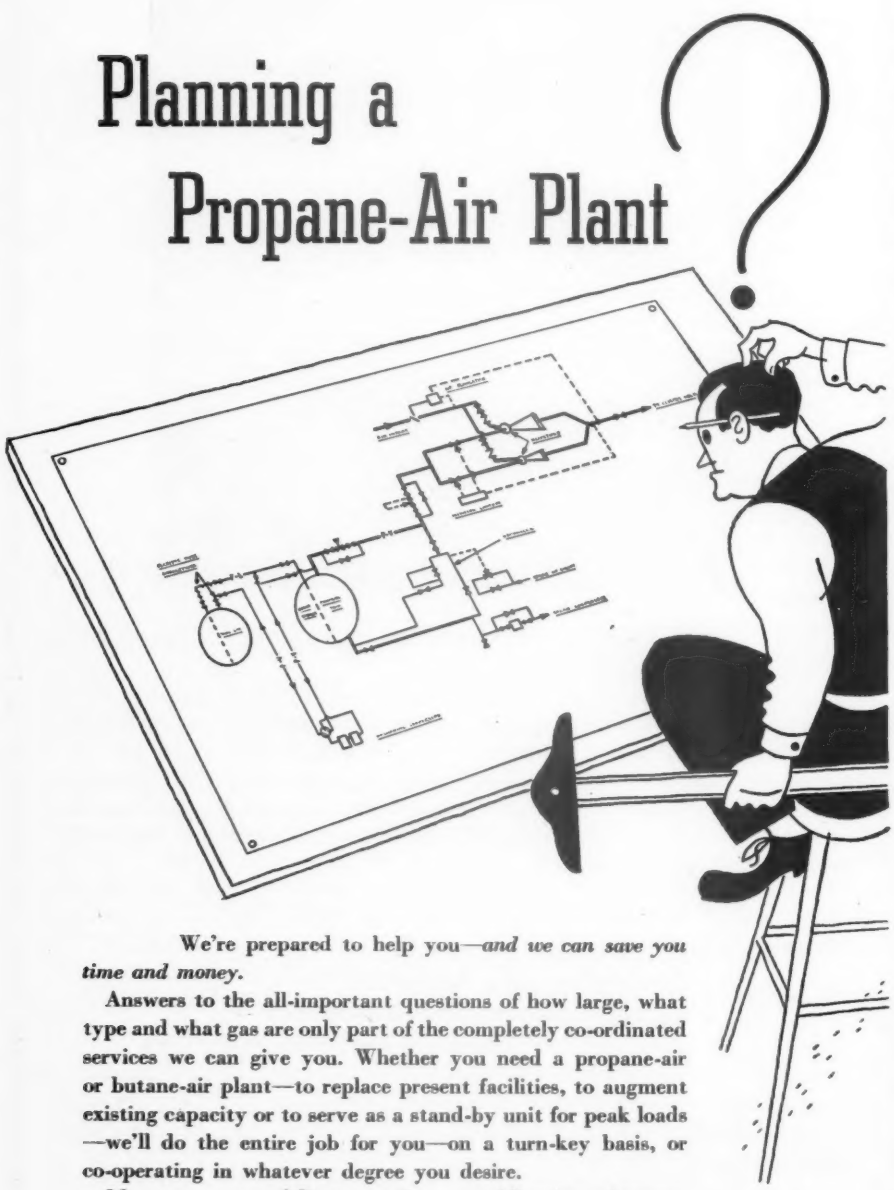
(6) The hot water demand originating in Restaurants, Hotel Dining Rooms, Lunch Rooms, Club Food Service, Institutional and Industrial Cafeterias or other food service establishments may be classified under *mass feeding.*

(7) The hot water required for the preparation of cleaning or other chemical compounds, degreasing or cleaning of mechanical equipment or parts, or other similar processes may be classified under the general heading of *industrial processing.* For example—the washing of garments, table and toilet linens, etc., in Commercial Laundries is distinctly an *industrial processing* operation.

(8) Grouping of *all* types of Large Volume or Commercial Hot Water Demand in but *three basic classifications* materially simplifies the problem of determining the volume of hot water which will be required to supply a specific demand. The potential hot water demand originating from any source may accordingly be forecast or determined by employing the appropriate "Yardstick" or formula which will be outlined in a future chapter for each of the three basic classes of Hot Water Demand.

Chapter 5 to follow, will discuss Mass Feeding Hot Water Demand and Mass Housing Demand.

Planning a Propane-Air Plant



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Answers to the all-important questions of how large, what type and what gas are only part of the completely co-ordinated services we can give you. Whether you need a propane-air or butane-air plant—to replace present facilities, to augment existing capacity or to serve as a stand-by unit for peak loads—we'll do the entire job for you—on a turn-key basis, or co-operating in whatever degree you desire.

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Summary of FPC Hearings at Charleston, W. Va.

SEVEN STATES in the coal producing Appalachian area and the District of Columbia presented witnesses at the final "field" hearing in the Federal Power Commission investigation, held at Charleston, W. Va., April 2 through April 11. The tenor of the testimony of all witnesses was that the FPC should be given no further jurisdiction over the natural gas industry, that the states should maintain supervision of all interstate phases of the business, that there should be no attempt made by the FPC to curtail supplies and no federal restriction over the end use of natural gas.

The most vigorous attacks against federal encroachment on state jurisdiction over the industry came from West Virginia, Pennsylvania, Georgia, and Kentucky, with Governor Clarence Meadows of the host state opening the hearing with this statement:

"These three industries (coal, oil and natural gas) constitute one of the chief factors upon which the economy of the state (or West Virginia) is based. The importance and weight of each to the economic structure of the state is such that any manipulation tending to favor one to the disadvantage of the other would inevitably destroy the equilibrium, and tend to create confusion in the industrial, social and business pursuits and relationships of our people, and render disorderly the processes of state government.

"It has never been seriously considered that the American conception of 'dual sovereignty,' except in grave national emergencies, contemplates displacement by the federal government of the powers of the state to regulate the production, transportation, distribution or sale of commodities produced, distributed, sold and consumed within the state. To the extent that such displacement may be attempted, whether by law, or regulation, by subtle encroachment or beguilement, every such attempt will be met by every available, lawful means within the power of the state to employ."

Speaking for the State of Pennsylvania, Vincent P. McDevitt, counsel for the Pennsylvania Public Utilities Commission, asserted that "assumption of jurisdiction by such an (outside) authority regulating natural gas matters alone would be uneconomic, since in Pennsylvania not only natural gas but coal and oil are produced in large quantities and such regulation of the end use of any one of these products will disturb the natural balance of the Pennsylvania economy."

One of the strongest statements in support of the position taken by the natural gas industry was that prepared by the Georgia Public Service Commission and read by N. Knowles Davis, chief engineer of that Commission.

That statement assailed the "hoarding" policy advocated by the State of Louisiana, denounced federal encroachment on state jurisdiction and end use restrictions, and contended that the current FPC investigation never should have been undertaken and should now be abandoned. It continued:

"The Federal Power Commission gave notice in the call for this investigation that it would inquire into potential reserves, conservation, and end use of natural gas as well as factors of competition with a view to making recommendations for additional legislation. Legislation in line with the apparent purposes of this investigation could have but two results:

"1. Invasion of the sphere of state authority and interference with local self government. 2. A further shift in the already dangerous trend toward controlled economy ultimately resulting in regimentation."

Mr. Davis also presented an exhibit he had prepared to show that if the major users of natural gas for boiler fuel in Georgia were prohibited from using fuel for that purpose, it would result in an increased cost for gas to residential and commercial users in Georgia of 21.25 per cent.

Kentucky, too, through its Governor, Simeon Willis, and Chairman Whittle of the State Public Service Commission, made strong statements along the same line. Governor Willis, expressing "substantial agreement" with the views stated at the Oklahoma hearing by that state's Governor Kerr, voiced the hope that "the hearings will result in a recommendation that the national government be not allowed to interfere in any way with the production, use, conservation, or movement of natural gas within the state, and that its activities be restricted to a fair and reasonable regulation of purely interstate transactions."

He said the opposition to the original Natural Gas Act was predicated on a very reasonable apprehension that it was but a first step toward federalization of the industry, and that "subsequent events have not dissipated the apprehension."

Speaking for the State of Virginia, which produces practically no natural gas, H. E. Ketner, commerce counsel for the Virginia State Corporation Commission, asserted:

"This Commission believes that the existing policy of the Natural Gas Act, with respect to the spheres of regulatory authority, is sound and in the public interest. Pursuant to the policy, the state regulates rates, service and other matters pertaining to all direct consumer sales, while the federal government regulates the interstate transportation of natural gas and its sale for resale. It is not believed that any change in the division of regulatory jurisdiction on these matters is required or would be compatible with public interests. The intrastate distribution of gas should be left with the respective states for supervision and regulation."

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East Texas Development of United Gas in Operation

The final link in United Gas Pipe Line Company's East Texas development project went into operation in May, it was recently announced in the company's general offices at Shreveport, La. This latest addition is the absorption gasoline plant at Carthage which is designed to process 150,000,000, cubic feet of gas daily (100,000,000 cubic feet completely processed and 50,000,000 partially.)

The new plant is an important step in the conservation of valuable constituents of the raw production of the Carthage gas-condensate field, it was said. Average daily recovery of the plant has been estimated at 150,000 gallons of such products as motor fuel, gasoline, kerosene, liquefied petroleum gases, butanes, propanes, naphtha, and other products, revenue from which otherwise would be lost.

A gathering system of more than 100 miles of lines will connect the plant with 81 wells in the Carthage field. Discovered in 1936, the field produces from the following zones: Rodessa (Hill), 5,000 feet; upper and lower Pettet, 5,700-6,000 feet; and the Travis Peak, 6,100-6,500 feet. Present proven acreage of the field stands at more than 210,000 acres.

Following is an analysis of the inlet gas to the plant:

Methane	91.35%
Ethane	3.89
Propane	1.48
Iso-butane	0.36
Normal butane	0.51
Iso-pentane	0.27
Normal pentane	0.23
Hexanes	0.49
Heptanes (and heavier)	1.42
TOTAL	100.00%

The Plant is designed to operate at a pressure of 1,200 PSI. Equipment includes one 85-HP gas engine recompressor, two 50,000 lbs. per hour-250 PSI-WP water tube boilers, along with two 20-tray high-pressure absorbers, a 14-tray reabsorber, two 20-tray stills, a condensate fractionator with 21 trays, a stripping tower with 12 trays, a debutanizer with 30 trays, a depropanizer with 40 trays, a deisobutanizer with 60 trays, and a de-ethanizer with 30 trays. Storage facilities have been constructed to accommodate 2,768,000 gallons of the various products.

The products manufactured, such as propanes, butanes, together with gasoline and distillate, etc., will move to market by tank cars, loaded at a 24-car rack and by tank trucks.

From the gasoline plant the gas then goes to the dehydration plant before being put into the company's main pipeline system. The dehydration plant consists of four units, 5 feet in diameter and 50 feet in height. The units are of the solid-adsorbent type, using as a desiccant an activated bauxite containing from 60-70% Al_2O_3. The flow of the system has been arranged so that the 4 units work in pairs, two in the line while the other two are in the regeneration cycle. The design also permits regeneration to be done without depressuring and allows the units approximately 12 hours idle time after regeneration before being placed back on stream.

After the dehydration process, the gas enters directly into the 24-inch Carthage-Sterlington pipe line which operates on the discharge pressure from the plant.

Construction was done by Stone and Webster Engineering Corporation with R. M. Wood as superintendent. C. W. Hollenshead was engineer in charge of construction for United, and J. D. Hilburn was resident engineer.

Meritorious Service Award

The American Gas Association is inviting applications from gas utility companies and manufacturer company members for consideration for the 1946 A.G.A. Meritorious Service Award bestowed to the employee who has performed the most meritorious deed during the year beginning July 1, 1945 and ending June 30, 1946.

In June 1933, Mr. Walter R. Addicks, Senior Vice President of the then Consolidated Gas Company of New York, tendered a medal to be presented annually by the American Gas Association. A sum was bequeathed to the Association in 1935 by the late Mrs. Margaret Jardine Addicks in memory of her husband, to carry on the award in perpetuity.

The award, consisting of a beautiful gold medal, button, and certificate, in the past has been bestowed for deeds of conspicuous judgment, intelligence or bravery, connected with the handling of materials of manufacture or the production, manufacture or distribution of gas. The discrimination with which the award has been granted greatly has increased its prestige.

Applications for the current award should be sent to A.G.A. Headquarters on or before August 1, 1946.

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Pennsylvania Gas Association Meeting

THE first post-war Convention, and its 38th, was held by the Pennsylvania Gas Assn. Galen Hall, Wernersville, Pa. May 21-22-23. About 250 delegates were in attendance.

The meeting started with a banquet Tuesday evening, followed by a business meeting and the election of officers for 1946-1947.

The new officers are: President, F. H. Trembly, Jr., Phila. Pa. first Vice President, James M. Huebner, Lancaster, Pa., second Vice President Bernard V. Pfeiffer, Phila, Pa., third Vice President, H. Smyser Bair, York, Pa., Secretary, William Naile, Lebanon, Pa., Treasurer, James A. Schultz, Reading, Pa., Managing Director, A. B. Millar, Harrisburg, Pa.

Hudson W. Reed, president of The Philadelphia Gas Works Company, and vice-president of the American Gas Association, made the principal address of the evening, in which he dealt with competition as an aid to progress.

He said, "Competition is not new—it has always been with us. If you have the will to fight, you may have no fear of competition. It may be very exhilarating or very distressing. It is as you will it."

H. N. Squire, presided at the start of the Wednesday morning meeting. The first paper presented was by E. C. Adams, Pittsburgh, Pa. on the subject:

"Ventilation, and the Problems Relating to Adequate Supply of Air for Combustion in Gas-Fired Equipment." "Most gas men feel" Mr. Adams said "that when gas water heaters and gas heating equipment are connected with flues and when ventilating fans are provided in kitchens, that the average house will not have any excess moisture problems. That is true of most of the older houses. But with the rapid growth of the use of insulation and weather proofing methods of building, which have been promoted by claims that they will be paid for out of savings in fuel costs, the public has become thoroughly sold on the idea that it is proper to keep down the entry of outside air in cold periods to the lowest possible minimum.

"As a consequence of these trends, moisture conditions within dwellings have tended to become critical in many cases where the causes of excessive moisture are not readily determined or easy to explain. These cases have developed in the class of houses that have been built during the past ten years.

F. H. Trembly Jr.

"Now we are coming into a period where a large volume of small and very tight houses are to be built. Experience has proven that the moisture accumulations in these small tight houses are far greater than we are accustomed to dealing with. Those who have studied the subject think that the problems involved in these moisture conditions will be of vital importance to the Gas Industry."

Research on this subject is now being carried on by Purdue University.

H. H. Ganser, Regional Vice-President, Philadelphia Electric Company, described the "New Pennsylvania Public Utility Commission Manufactured Gas Regulations".

"Peak and Base Load Gas Production—Past and Future" was the subject of a paper presented by E. G. Boyer, Manager Gas Department, Phila. Electric Co., in which he described the various ways his company operates to increase gas production from present equipment.

The Accounting Section took over here with F. W. Lesley, presiding. The papers presented were: "Reserve Pension Plans" by Harold P. Mills, Metropolitan Life Insurance Company and "Review of Developments of Interest to Public Utility Accountants and Management" by Curtis T. Atkisson, Ebasco Services, Inc.

Thursday's program featured employee and industrial relations, and sales activities, which were covered in talks by Dr. Alfred J. Cardall, former director of industrial relations of the John B. Stetson Company; H. Vinton Potter, director of the New Freedom Gas Kitchen Bureau of the American Gas Association; J. B. Bennett, design and test engineer of the Caloric Gas Stove Works, Topton, Pa.; and Lyle C. Harvey, president of the Bryant Heater Company, Cleveland, Ohio.

The Entertainment Committee deserves special credit for the fine floor show they provided, which took place after the banquet Tuesday evening.

Arkansas Utilities Assn. Convention at Hot Springs

C. L. Leighton, division manager for the Southwestern Gas and Electric Company, DeQueen, Ark., was elected president of the Arkansas Utilities Association May 14 at the final session of the group's two-day annual convention at Hot Springs.

Others elected were C. H. Thorpe, Little Rock, superintendent of the Little Rock district of the Arkansas-Louisiana Gas Company, first vice president; Morgan Wright, Fort Smith, district manager of the Oklahoma Gas and Electric Company, second vice president, and Robert E. Ritchie, Little Rock, vice president of the Arkansas Power and Light Company, secretary and treasurer.

A paper by Col. Willard F. Rockwell, president of the Rockwell Manufacturing Company, Pittsburgh, entitled, "The Economic Future of the Natural Gas Company," was read by A. J. Kerr, vice president of the company.

In his paper Rockwell called attention to predictions by "government economists" who, he said, "convinced the politicians in power there would be enormous unemployment and therefore deflation immediately after VE Day."

Chester Bowles, he said, admitted that every preliminary estimate he had made was wrong, "but he wanted to retain power to carry out his newest theories.

"As many observers have pointed out, the government policy on VE Day was to fight inflation by holding down prices, and to avoid deflation by increasing wages. The federal government, as a principal beneficiary of the excess profits tax and the principal loser under the 'carry back' provisions of the tax law, has adopted a policy which is extremely inflationary."

Dr. Allen D. Albert, Paris, Ill., spoke on "Ascendant America"; Edgar H. Dixon, president of the Electric Power and Light Company, New York, spoke on "Our Stake in Arkansas and the Southwest."

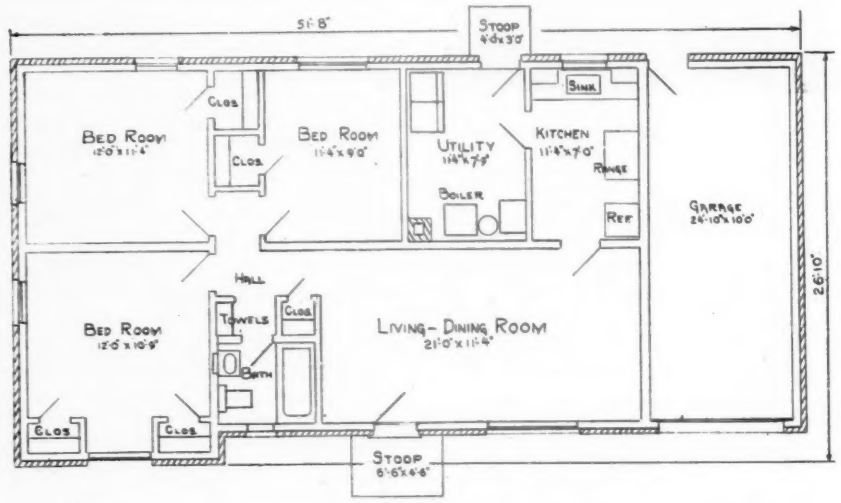
Charles C. Wine, chairman of the Arkansas Public Utilities Commission, and Edward Vennard, vice president of the Middle West Service Company, Chicago, spoke at the opening sessions presided over by L. L. Baxter, Fayetteville.

Ashton B. Collins, president of the Reddy Kilowatt Service of New York, E. Holley Poe of New York, and George S. Jones, Jr., vice president of Servel, Inc., Evansville, Ind., were also speakers.

Gas Heated Small Homes Using Radiant Heating

Gas is the fuel choice and radiant heating the system used in the first postwar housing development in the nation to feature radiant heating, now nearing completion in Pittsburgh, Pa., where 33 one-floor plan five and six room houses are being built in a residential area called South Hills Acres.

The 33 houses are described as "utility-type, streamlined, livable homes," the radiant heating systems being supplied with hot water from gas-fired boilers in each house.



Typical floor plan of one of the houses shows the overall dimensions.

The matter of space utilization is an important consideration. With the wrought iron radiant heating coils concealed in the concrete floor, virtually every inch of floor space is available for use and the slab is kept uniformly warm.

Hot water for the radiant heating system is circulated through the coils by a small pump and each system contains about 55 gallons of water. The pump action is controlled by an ordinary wall thermostat. An aquastat regulates water temperature. Balance cocks for supply mains to individual rooms have been centrally located in a pit with removable plate in the utility room. Once the cocks have been adjusted according to the desired conditions of comfort in each room, they need not be touched during the entire heating season.

In a typical three-bedroom house at the project, the combination living room-dinette is 21′ x 11′4″ and the kitchen is 11′ x 7′. Since the basement has been eliminated, the gas-fired boiler, water heater and laundry facilities are located in a utility room that measures 9′ x 11′ and adjoins the kitchen. One bedroom, having two closets, is 10′9″ x 12′ and the other two bedrooms, with one closet each, are 9′ x 11′4″ and 11′4″ x 12′. Metal-framed windows are used throughout and the living room window is approximately 6′ wide x 5′ high.

Garages are attached to all houses, some being on grade and some below grade, depending upon the degree of slope in the land. Some open in front while others have entrances in the rear. All garages are 9′4″ x 24′ with concrete floors and cement plaster walls.

Exterior walls of the house are brick veneer with cut stone being used to enhance the appearance of the fronts. Interior walls are tinted plaster on rock lath. A composition roof is installed on each house.

Prices for the houses range from $6900 to $8900, including the lot.

Lots of Gas for Industry

"By the grace of God, geography and lots of natural gas" was the headline of a full page advertisement appearing in several New York newspapers recently during the coal strike.

The Dallas (Texas) Chamber of Commerce, sponsors of the advertisement, in extolling the advantages of their area for industries said, "The Dallas Southwest's almost inexhaustible supply of natural gas provides the best and cheapest fuel for industrial as well as domestic uses. Natural gas for steam generating plants of Southwestern power companies insures uninterrupted electrical power for the general public as well as industry."

Here, natural gas is the keystone that holds industry, and attracts new enterprises to that territory. *The Trend Continues To Gas.*

NOT 1 YEAR
NOT 3 YEARS
NOT 5 YEARS
BUT..
10 YEARS
The freezing unit of Servel Gas Refrigerators is guaranteed unconditionally for 10 years. It has no moving parts to wear out! See the Servel Gas Refrigerator.
THE OHIO FUEL Gas Company
Servel
GAS REFRIGERATOR

A TWO COLUMN, TWENTY-INCH HIGH SERVEL AD USED DURING MAY IN LOCAL PAPERS BY THE OHIO FUEL GAS COMPANY. RADIO FANS WILL RECOGNIZE THE THEME.

"Springboard to Action" Program

"Springboard To Action" is the title of a series of dealer meetings now being presented by members of the Sales Department of the Geo. D. Roper Corporation throughout the country to selected dealer groups. The purpose of the presentation, timed with deliveries and breaking of Roper's national advertising in national magazines, is to inspire their dealers with the tremendous selling opportunities which lie ahead in the gas range market.

While the Roper Corporation has always had a Sales and Service Training Program available for all their dealers, a need for a more inclusive program has been created as dealers have shown an added and growing interest in the production story of manufacturers and special features of contemplated production. The Roper Management has been prompted to make this program immediately available for use as it will give the dealer the opportunity to capture as much of the heavy volume of public spending money as possible and it has been noted to a surprising degree the dealer's interest in promotional plans which would sustain consumer interest in gas ranges during a period when there will be tremendous competition between manufacturers of consumer goods.

Selection of Salesmen

Inasmuch as during four years of war time economy, in which practically no appliances were available in volume, many older, experienced, and highly productive salesmen had to seek other lines for steady employment. On the other hand, young men just returned from the Armed Services would have little or no selling experience. The Roper plan, therefore, in order that such men can be ready for active distribution of appliances, offers a training service as they feel it is necessary to train salesmen now with a plan that will not only be a short cut to the reconditioning of duration men, but will also rebuild the organization with a high percentage of productive new men.

Sales Training Program

The plan consists of a series of pocket size pamphlets, the subject matter of each being keyed to a specific requirement to produce well-rounded educational material necessary in the building of successful salesmen. Some of the subjects covered are "Gas versus Electricity," "Gas Range Buyer's Guide," "Product Visualizer," "Selling Wisdom," etc. Another series deals entirely with what each part of the Roper Range will do for the ultimate consumer and reasons why. The Sales Training series is very complete, written interestingly and concisely and all information is based on case histories of successful Roper salesmen.

Demonstration Units

Offered for sales in this plan are action demonstration units, including a "cutaway" or "X-Ray" Roper model of a DeLuxe range and a Giant Simmer Speed burner mounted in an attractive porcelain case. Each can be hooked up for demonstration purposes and the single burner unit can be carried by salesmen, home economists, or service men, into a prospect's home to be hooked up and demonstrated. These units will prove invaluable in bringing even the most intimate structural and operational details of modern Roper Gas Ranges to the prospect's attention.

Roper Knights of the Sauce Pan

As an incentive to dealer salesmen becoming more proficient, they are offered an opportunity to become members of the national exclusive dealer organization — the "Roper Knights of the Sauce Pan." Admission to this "Order" is based on the ability of the salesman to present simple cooking demonstrations, which will prove the claim of superior qualities of Roper Gas Ranges. Successful candidates are allowed to wear the apron and cap of the cooking profession and are given a scroll as a testimonial of their membership.

Sales Control Program

The training of retail salesmen and sales supervisors requires the whole support of general management, sales management, and the retail salesman. To this end an important part of this program includes a "Sales Control Plan," which at all times will satisfy the requirements of these three parts of a sales division. The system represents a thoughtful series of record keeping forms, which are simple yet adequate, brief and yet accurate. It is comprehensive, all inclusive, so that it can be used successfully in its entirety or in part as it may apply to a dealer's requirements. No Department, Furniture, or Hardware store is too small or too large that this plan cannot be used. It is geared to utility sales activities as well as to those of the Liquefied Petroleum gas dealer.

Advertising Program

A well-rounded advertising program has always been a basic policy of the Roper Corporation in aiding dealers in the sale of Roper Gas Ranges. This activity will continue and increase as occasion requires it. Included will be attractive, colorful material in the form of folders, booklets, backgrounds, newspaper mats, catalogs, and Visualizers.

Special material has also been created for individual groups of customers; such as, utilities, Department Stores, Furniture Stores, and the L. P. Gas Industry.

These standard and special features will all be supported by the maintenance of the National Advertising Program.

Summary

Under the very appropriate heading of "Roper Jewels of Cooking Performance" a splendid product story has been developed by the Roper sales executives. This presentation is built around a new and handsome Roper nameplate, announced this year, and summarizes the entire sales promotion plans and material available to Roper dealers, which includes Sales Control, Sales Training, Service, Promotional Material, Animated Displays, and an Advertising Program. The entire presentation, in part or its entirety, is a master product story and is impressive because of its adherence to basic facts of salesmanship. It is a carefully worked out series of plans which, if adopted, will stimulate better salesmanship.

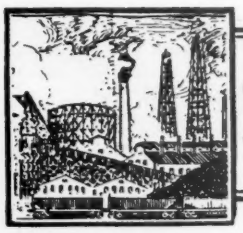
AN EDUCATIONAL PRIZE-PACKAGE!

The "Service of Selling" Series of Sales Training Texts

On all sides, merchandisers are busy preparing for the highly competitive days to come. Sales training programs are a MUST with all alert organizations. Many are developing their programs around the newly-published "Service of Selling" salesman training books which were expressly written to promote appliance selling. You can't afford to delay. Order now. Set of 3 volumes, clothbound, only $4.00.

The Cleveland Heater Co.

2310 Superior Avenue
Cleveland 14, Ohio



News of the Gas Industry

Pacific Coast Gas Association Schedules September Meeting

Not since 1941 has the Pacific Coast Gas Association had a general membership meeting. In 1942 and 1945 the annual meetings were confined to members of the Board of Directors and committee leaders. In 1943 and 1944 the annual meetings had a large attendance representative of the Los Angeles area, but attendance from other districts was limited to 50 in compliance with federal regulations.

In 1946, President H. W. Edmund announces that the Association will hold a Convention. The dates are September 10, 11 and 12 and the place is the Fairmont Hotel, San Francisco. President Edmund will act as Chairman of the Program Committee assisted by Section Chairman J. W. Vanier (Accounting), E. T. Howard (Manufacturers), R. L. Hayden (Sales) D. E. Farmer (Technical) and W. R. Davis (Personnel).

Indiana Gas Association

The 36th Annual Convention of this Association held May 9th and 10th at French Lick Springs, program of which was given in the May issue of the *Journal,* was well attended by an enthusiastic gathering of members and guests.

E. D. Anderson, President
Indiana Gas Association

Frank and extemporaneous discussion of the papers characterized the sessions. New officers elected at the close of the meeting are:

President—E. D. Anderson, Vice President, Northern Indiana Public Service Co., Hammond.

Vice President—Dean T. Burns, Asst. Mgr., Citizens Gas & Coke Utility, Indianapolis.

Secretary-Treasurer—Clarence W. Goris, Division Manager, Northern Indiana Public Service Co., Gary.

New directors elected for a three year term expiring in 1949 are: Louis B. Schiesz, President, Indiana Gas & Water Company, Indianapolis; Edward M. Hahn, President, Kokomo Gas & Fuel Company, Kokomo; E. G. Peabody, Sales Manager, Citizens Gas & Coke Utility, Indianapolis.

Hold over directors are: R. S. Brunner, Terre Haute Gas Corporation; Terre Haute; E. E. Linburg, Richmond Gas Corporation, Richmond; A. E. Hatley, Central Indiana Gas Company, Marion; C. K. Graham, Southern Indiana Gas & Electric Co., Evansville; H. W. Thornburg, Central Indiana Gas Company, Anderson; V. C. Seiter, Citizens Gas & Coke Utility, Indianapolis.

Wisconsin Utilities Assn. Elects B. E. Miller Pres.

B. E. Miller, Madison, secretary of the Wisconsin Power & Light Co., was elected President of the Wisconsin Utilities Association in the annual mail balloting of the membership. He succeeds M. H. Montross who becomes chairman of the Association's Advisory Committee. Mr. Miller was vice president during the past fiscal year.

E. C. Brenner, chief engineer of the Milwaukee Gas Light Co., was elected Vice President.

Alfred Gruhl, research engineer of the Wisconsin Electric Power Co., was re-elected Treasurer.

The new officers took office with the beginning of the fiscal year on May 1, 1946.

Mr. Miller has been active in Association affairs since 1926 when he joined as an active member.

In December of 1925 he entered the employ of Wisconsin Power and Light Co. as manager of the Rate department. He has been with the Wisconsin Power & Light Co. continually since that time.

He was elected Secretary of the company by its Board of Directors in 1932, which position he now holds in addition to the position as Manager of the Rate and Valuation departments. His duties are those usually assigned to the position of secretary and in addition has charge of all rate matters affecting the company, valuations of the company's property, including unit property records and work order analyses.

Arkansas Utilities Assn. Elects C. L. Leighton Pres.

C. L. Leighton, division manager of the Southwestern Gas and Electric Company at DeQueen, Ark., was elected president of the Arkansas Utilities Association at the annual convention of the organization on May 14th, succeeding L. L. Baxter of Fayetteville, president of the Arkansas Western Gas Company.

C. H. Thorpe, superintendent of the Little Rock district of the Arkansas-Louisiana Gas Company, was elected first vice president and Morgan Wright, district manager of the Oklahoma Gas and Electric Company at Fort Smith was elected second vice president.

CONVENTION CALENDAR

June

3-5 *American Gas Association Joint Production and Chemical Committee Conference,* Hotel Pennsylvania, New York.

6 *American Gas Association* Midwest Personnel Conference, Kansas City.

11-12 *Gas Appliance Manuf. Assn.* Annual Meeting, Drake Hotel, Chicago.

18-21 *Canadian Gas Association,* 39th Annual Convention, Manoir Richelieu Hotel, Murray Bay, P. Q., Canada.

September

9-11 *Sixth Annual Appalachian Gas Measurement Short Course,* West Virginia University, Morgantown, W. Va.

10-12 *Pacific Coast Gas Association,* Annual Convention, Fairmont Hotel, San Francisco.

12-13 *Midwest Industrial Gas Council,* The Radisson Hotel, Minneapolis, Minn.

October

7-11 *American Gas Association,* Annual Meeting, Atlantic City, N. J., Convention and Exhibition.

Gas Sales of New England Power System Companies

The report for 1945 issued May 1st by New England Power System Companies shows a healthy growth of gas sales which has been continuous since 1938. Gas revenues for 1945 totaled $7,388,000, an increase of $228,000 over 1944. Of the gas sold, 87% was for domestic cooking and heating. Four thousand new gas customers were added during the year. Gas rates show a slight decrease over 10 years.

Average employe on the System has 17 years of service. More than 1000 employes have served for over thirty years and many will benefit from retroactive retirement credits.

Gordon Appointed Sales Dir. Washington Gas Light Co.

Roger A. Gordon has been appointed Director of Sales for the Washington Gas Light Company and its nearby Maryland and Virginia subsidiary companies, it is announced by Vice-president and General Manager Everett J. Boothby. In his new position, Mr. Gordon assumes responsibility for the general direction and supervision of all residential, commercial, industrial and government sales activities.

Roger A. Gordon

Mr. Gordon's appointment to his new post climaxes a career of thirty years in the public utilities industry, during which time he has held key positions in both gas and electric companies of Illinois, Iowa, Michigan, Kentucky and Rhode Island. He joined the Washington Gas Light Company in an executive sales capacity seven years ago.

Associated with Mr. Gordon in the system-wide sales organization which he now heads is General Sales Manager A. J. Maloney, recently returned from military service, who continues in charge of residential sales activities, and Manager of Utilization Leon Ourusoff, who continues in charge of commercial, industrial and government sales activities.

Metropolitan Gas House Htg. Council Elects Officers

James E. Cook, manager of the House Heating Division, Westchester Lighting Company, Mt. Vernon, N. Y., was elected chairman of the Metropolitan Gas House Heating and Air Conditioning Sales Council at the annual meeting of that organization held in Somerville, N. J., on May 15.

Mr. Cook has been associated with the Westchester Lighting Co. for the past 11 years. Previously he was employed by the Petroleum Heat and Power Co., in White Plains, N. Y. He is an honorary member of the Westchester Chapter of the American Institute of Architects; and also is a member of the American Gas Association and the Home Builders Association of Westchester.

Other officers elected by the council included: Lewis G. Paulding, Long Island Lighting Co., Mineola, N. Y., vice-chairman; and Henry A. Diekmann, The Brooklyn Union Gas Co., Brooklyn, N. Y., secretary-treasurer.

New Primary Air Injection Formula Developed

Providing designers and engineers with greater flexibility in solving problems of modern gas burner design, a new primary air injection equation has been developed by engineers of the American Gas Association Testing Laboratories.

The new equation is the result of continued studies on individual elements of burner design affecting atmospheric injection, sponsored by the Committee on Domestic Gas Research. Its derivation and application is presented in Research Bulletin No. 37, Primary Air Injection Characteristics of Atmospheric Gas Burners—Part II, recently published by the Laboratories.

The new bulletin carries forward the research reported in Bulletin No. 26 in which burner design factors affecting injection were analyzed and an empirical relationship formulated for numerous contemporary burners. The new formula extends correlation between injection and design to instances where deviation from conventional design is contemplated and incorporates additional design factors not formerly isolated. A chapter is devoted to the solution of practical problems by use of the equation.

Hartford Gas Co. Appoints Hall Appliance Sales Mgr.

Lt. Colonel Herbert L. Hall of Somerset, Mass. has been appointed appliance sales manager of the Hartford Gas Company. He is now on terminal leave from the Army Air Forces, Headquarters Air Technical Service Command.

Herbert L. Hall

Prior to his enlistment in March, 1942, he was merchandise sales manager for the Fall River Gas Co. He was a member of the Fall River Chamber of Commerce, New England Gas Association, school committeeman in Somerset, Mass., where he resides, and a member of the Masonic Order.

Hall has a successful merchandising background and in 1940 was awarded a trip to Miami and Nassau for an outstanding sales record of gas refrigerators in the Fall River area.

J. J. Winn Jr. Appointed To Honolulu Gas Co. Post

J. J. Winn, Jr., former commercial manager of Portland Gas & Coke Co., has become Vice President and General Manager of Honolulu Gas Co., succeeding H. W. Boynton.

E. E. Black succeeds Alfred L. Castle as President in a general change of executive personnel.

CRUSE-KEMPER COMPANY
AMBLER, PENNA.
GAS HOLDERS
Low Pressure High Pressure Inspection
Purifiers Tanks Flues
Over 40 Years of Sound
Steel Plate Construction

Calif. Master Plumbers Adopt Water Heater Sizing Chart

Proper sizing of water heaters and the extensive inter-state acceptance in the eleven western states which has been accorded the sizing chart for minimum sizing recommendations for gas water heaters prepared by the Water Heater Council of the Pacific Coast Gas Association, was discussed at the 45th annual convention of the State Association of Master Plumbers of California, Inc., by Clyde H. Potter, manager of appliance sales, Southern Counties Gas Co. of Los Angeles.

The plumbers held a three-day conference. the association's first postwar convention since 1942, at the Biltmore Hotel, Los Angeles, April 29 to May 1.

Mr. Potter, as chairman of the Pacific Coast Gas Association water heater council which made a prolonged study of gas water heater capacity requirements before developing the minimum sizing chart in the summer of 1945, was invited to tell the plumber and appliance dealer members of the State Plumbing Association the latest developments in water heater sizing and how the minimum chart was being received in the territory of the P.C.G.A.

In a review of the activities which led up to the completion of the sizing chart, Mr. Potter told the convention that the water heater council, after a thorough analysis on the part of water heater manufacturers, utility experts and others, had adopted and produced a "Water Heater Sizing Chart." The chart, he declared, had been endorsed by the Pacific Coast Gas Association and the Merchants Plumbers Association of Los Angeles.

Complete story of "sizing chart" was printed in the September, 1945, issue of American Gas Journal.

The committee which developed the sizing chart, prepared the booklet and directed the program of getting the project indorsed by gas companies and accepted by installers, included the following:

Cochairman, Claude Ballinger, Republic Heater Co.; R. V. Davis, O. A. Smith Corp.; Arthur Dolan, Hoyt Heater Co.; Robert Felton, H. R. Basford Co.; William L. Hoyt, Day & Night Mfg. Co.; Wayne R. Smith, Continental Heater Co.; A. H. Sutton and Everett Todd, Mission Appliance Co.; H. W. Geyer, Southern Counties Gas Co.; and George Merkle, Southern California Gas Co.

The resolutions committee of the California Association of Master Plumbers subsequently approved a resolution which endorsed the Pacific Coast Gas Association's minimum sizing chart for gas water heaters as a commendable effort and urged all members of the plumbers' association to further public acceptance of the recommendations contained therein, particularly in respect to discouraging sale of 20-gallon water heaters and pushing the sale of heaters of 30-gallon or more capacity.

Remarks significant to the gas industry and gas appliance dealers were contained in an address made by R. K. Landreth, Lubbock, Texas, president of the National Association of Master Plumbers.

Mr. Landreth accentuated the urgent need for all master plumbers to become merchandisers of appliances as well as sellers of labor and plumbing fixtures. Plumbers, he said, must become scientific merchandisers of the gas-fueled and other units they install, such as water heaters, space heaters, furnaces etc. To survive in the competitive postwar period, Mr. Landreth declared, it is essential for all plumbers to install appliance salesrooms and sell equipment as well as labor, instead of referring customers for such merchandise to the distributors and manufacturers.

L. P. Gas for Brooklyn, N. Y.

Brooklyn Union Gas Co. as part of the extension of their manufacturing facilities and services have contracted with Pacific Gas Corporation for the construction of a plant with a production capacity of twelve million cubic feet of 550 Btu gas a day. Propane storage capacity will permit operation for five days before replenishing the supply.

It is expected that the plant will be in operation by early December if they do not encounter unforeseen delays and if strikes do not interfere too much with steel production. The critical bottleneck is in the delivery of the 300 psi storage tanks. These are special, and the suppliers are months behind in shipments.

The plant and its operation are extremely simple. It consists of a set of six motor-driven propane vapor compressors for unloading propane at the dock; fourteen tanks each to store 25,000 gallons of liquid propane in the yard north of the Exhauster House and six gas-air machines, each about 4′ x 6′ x 7′ high.

The piping consists of a 6″ liquid propane line from the dock to the tank farm; a 4″ liquid propane line from the tank farm to the gas-air machines; a 4″ propane vapor line between the tank farm and the compressors; a 4″ manufactured gas line from the works Exhauster House to the tank farm, with two motor driven compressors to "repressure" the propane storage tanks after some of the propane has been drawn off; and a 36″ propane-air gas main from the gas-air machines to the 48″ outlet main from the station meters outside the Meter House.

This propane-air plant will be very effective as peak load insurance during very heavy sendout periods.

L. P. Gas in Wisconsin

Gas output of the Madison Gas & Electric Co. will be increased 15 per cent following receipt of permission from the Public Service commission to spend $19,115 for the installation of a 30,000 gallon propane storage tank, vaporizer, gas-air diluting equipment and a building to house this equipment.

The Merrill Gas Co., Merrill, Wis., has been authorized to install a propane air gas plant at a cost of $15,500, replacing water gas equipment.

The Great Lakes Pipeline Co., a Delaware corporation with headquarters in Kansas City, Mo., has petitioned the Public Service Commission to pipe liquid petroleum products into Wisconsin, adding to its lines now extending into Minnesota, Iowa and Illinois from Oklahoma.

The Northern States Power Co. has obtained Commission permission to erect a propane enrichment plant at Eau Claire to cost $11,200.

Large Propane-Air Plants for The Ohio Fuel Gas Company

Contracts have been awarded to Stacey-Dresser Engineering of Cleveland, Ohio, division of Stacey Brothers Gas Construction Co. of Cincinnati, Ohio, for the installation of two large propane-air plants, one to be located at McMahon compressor station near Perrysburg, Ohio, and the other at Mt. Sterling compressor station near Mt. Sterling, Ohio. The two plants will have a combined capacity of 46,000,000 SCF per day.

The McMahon plant will produce 15,000,000 SCF per day of 1,500 Btu. propane-air gas, which will be introduced into the natural gas transmission system at 100 psig, while the Mt. Sterling plant will produce 31,000,000 SCF per day to be introduced at 300 psig. One hundred ten (110) 30,000 gallon propane storage tanks will be installed. The contract calls for completion this fall.

This propane-air capacity will assist in meeting peak winter loads experienced by The Gas Company. The location of the plants were chosen so as to take advantage of presently installed gas compression equipment and to permit introduction of the peak load gas into the transmission system near major terminal markets.

Col. Rockwell Elected Director of United Engineering

Colonel W. F. Rockwell, Board Chairman and President of Rockwell Manufacturing Company, has been elected to the Board of Directors of United Engineering and Foundry Company, Pittsburgh, Pa. United Engineering manufactures heavy duty machinery used by the steel industry.

Colonel Rockwell's interest in the machinery industry is one of long standing. Thirty years ago, when in private practice as a consulting engineer, he helped to perfect the development and practical application of many machine tools now commonly used in industry.

He has the unusual distinction of being Chairman of the Board of three companies that are listed on the New York Stock Exchange. His Directorships embrace four firms that are listed on the Big Board. By special permission he is serving as a Director of two National banks.

"We View With Pride"

Above is the title of a colorful folder issued by Geo. D. Roper Corporation, Rockford, Ill.

The folder cites the significance of the return emblem for service men, the Army-Navy three-star pennant awarded the Company and the insignia nameplate on Roper ranges which indicates high standard of cooking performance. The folder has been mailed to all customers and employees.

Refrigerating Data Book

A completely revised and, in some cases, re-written, 800-page volume of the Refrigerating Data Book dealing with refrigeration applications, published by The American Society of Refrigerating Engineers, 40 West 40th Street, New York, is now being distributed to its members.

Covering practically the entire application field of refrigeration and air conditioning, the book brings together for the first time in one volume, comprehensive and authoritative information adopted for the salesman or the design, installation and service engineer.

In the Classified Section of the Data Book will be found a comprehensive list of refrigeration equipment products and the companies that manufacture them. This list has been subdivided and cross indexed.

Another feature is an extensive list of manufacturers of component parts and accessories of refrigeration systems.

Following its distribution to A.S.R.E. members, the Data Book will be made available to non-members.

Homemaker's Digest

The second issue of the Homemaker's Digest, is announced by R. J. Canniff, advertising and sales promotion manager for Servel, Inc.

The 24-page issue, done almost entirely in four colors, features condensations from such women's publications as Woman's Home Companion, The American Home, Better Homes and Gardens, Good Housekeeping, Parents', Woman's Day, and McCalls.

Published by the Homemaker's Institute, Evansville Ind., one of the most interesting articles is a condensation from the Woman's Home Companion by Elizabeth Beveridge, their home equipment editor. In her story, "Your Kitchen Problem Solved," solutions for three very common kitchen arrangement problems are suggested.

Josephine Wayer's feature on "How to Choose a Refrigerator" gives eight points the average housewife should consider in deciding on a refrigerator.

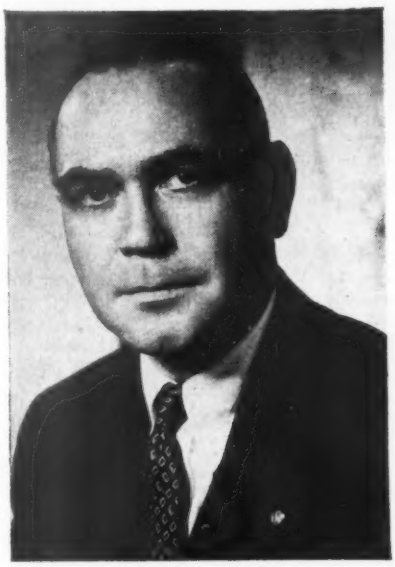
Other appliance articles in this issue concern cooking and water heating.

The booklet is available to the gas industry in quantity lots for distribution.

R. W. McClenahan Elected V. P. American Meter Company

American Meter Company has announced the election of Col. R. W. McClenahan as a Vice-President of the Company, effective as of April 17th, 1946.

Col. McClenahan returned to the Company after his discharge from the U. S. Army Air Forces in November, 1945. He has been active since that time working on special assignments for the Company.



R. W. McClenahan

Granted a leave of absence from his duties as manager of the Philadelphia Company since February 1st, 1926, he was commissioned a Major in March 1942, was promoted to Lt. Colonel on September 1, 1942 and to Colonel on April 3, 1943. He went overseas on May 18, 1942 where he served as assistant Chief of Staff to the Commanding General, U. S. Army Air Forces, Middle East; later was made assistant Chief of Staff, 9th Air Force with headquarters at Cairo. In January of 1944 he was transferred to England as assistant Chief of Staff to Commanding General, 9th Tactical Air Command. He participated in the planning and execution of air support for the Normandy invasion, and in close support of the 1st U. S. Army.

In January of 1945 Col. McClenahan was transferred to headquarters, U. S. Army Air Forces Intelligence Division at Washington, D. C.

He has been decorated with the Legion of Merit, Bronze Star and the Order of British Empire.

Rockwell-Emco Meter Bulletin

The recently announced Rockwell-Emco No. O Domestic Gas Meter is described in a new bulletin just issued by the Pittsburgh Equitable Meter Division of Rockwell Manufacturing Company. The three important advantages of this design, improved performance, simplified repair and reduced weight are clearly explained by detailed photographs and explanatory text. A four-page section of the bulletin is devoted to a discussion of aluminum alloy pressure castings for use as meter bodies. Write to Pittsburgh Equitable Meter Division, Rockwell Manufacturing Company, 400 N. Lexington Avenue, Pittsburgh 8, Pa., and ask for Bulletin No. 1100.

New Freedom Kitchen Summers at Steel Pier, Atlantic City

The Victory Home of the Century will open on the Steel Pier, Atlantic City, June 15th. It is expected that a half million people will visit the display during the following three months. Servel will display a New Freedom Gas Kitchen and featured in it will be the latest "CP" automatic clock controlled gas range.

Demarest Appointed to Post with Fluor Corporation

Kenneth D. Demarest, formerly with the Griscom-Russell Company, has been appointed district engineer of the Fluor Corporation, Ltd. in its New York headquarters.

Demarest's work for the past 15 years has been in connection with the oil, gas, and chemical industries. His duties have taken him over most of the United States and as far as Venezuela.

Beginning his career in the engineering and factory test departments of Griscom-Russell, he later became proposition and sales engineer in their New York office, followed by several years in the southwestern district which included direct handling of the Oklahoma and Kansas territories.

CONNELLY IRON SPONGE

High in efficiency . . . low in cost. In hundreds of plants through out the country, Connelly Iron Sponge has proven itself . . the finest purification material on the market. Not only does it lower your purifying cost but its high activity and capacity tends to reduce distribution and service complaints because of the cleaner gas which ultimately lowers operating and maintenance costs

If you have a problem in gas purification, Connelly's 68 years of experience is at your service. Our engineers can help you . . . there is no obligation on your part.

CONNELLY IRON SPONGE & GOVERNOR CO.
ELIZABETH, N. J. LOS ANGELES, CALIF
3154 SOUTH CALIFORNIA AVE., CHICAGO 8. ILL.

Have you considered a
CHECK-UP
of
GAS PLANT PERFORMANCE
Investigations and Reports by Qualified Engineers
COAL CARBONIZING COMPANY
314 North Broadway
St. Louis 2, Mo.

W. J. Stanton Succeeds Watson With National Supply Co.

Boyd Watson, District Manager of the New York office of the Spang-Chalfant Division of The National Supply Company, retired May 1st after 41 years with the division and its predecessor, Spang Chalfant, Inc. W. J. Stanton, who has been with the Company for 14 years, succeeds Mr. Watson. Mr. Stanton was the Company's liaison representative in Washington from 1941 throughout the war.

W. J. Stanton

Mr. Watson first served Spang Chalfant in the Legal Department. He later transferred to the sales organization as District Manager in the Pittsburgh office and later as Vice President of Spang Chalfant, Inc., with offices in New York.

Mr. Stanton, during his many years in the pipe industry, has developed a host of friends in the public utility, municipal, and transportation fields.

C. W. Perelle Becomes President of Gar Wood Industries

Charles W. Perelle has been elected president of Gar Wood Industries, Inc., it was announced by John J. Bergen, chairman of the board. He succeeds Glen A. Bassett, retired.

Mr. Perelle brings to Gar Wood, the world's largest maker of truck and trailer

Charles W. Perelle

equipment, a managerial production and organizational know-how that has twice been called upon by the War Department to help solve specific production crises.

Gar Wood Industries has its main plant in Detroit, and plants in Mattoon, Illinois; Findlay, Ohio; Newport News, Virginia; and San Francisco. It is a leading producer of truck bodies and hoists and of winches and cranes. Also a leading maker of road machinery, boats, automatic heating equipment and tanks for transporting liquids.

Gas Range Design Contest

The greatest collection of gas range designs ever assembled were considered in the judging of American Stove Company's $18,000.00 Magic Chef "Gas Range of Tomorrow" Competition.

In announcing names of winners, S. E. Little, vice-president, stated that well over 500 entries were considered and that every conceivable range design was included. Six women shared in the awards. He said there was no doubt that the contest had greatly increased the "gas consciousness" of consumers, architects and designers alike.

The first prize award was for $5,000.00; second prize, $3,000.00; third prize $2,000.00; and fourth, fifth, and sixth prizes, $1,000.00 each. In addition there were ten $500 awards.

All winning designs are now being studied in an effort to determine what can be incorporated in the "Gas Range of Tomorrow."

The jury in the contest was composed of Dr Elaine Knowles, Teachers' College, N. Y.; Peter Schladermundt, industrial designer, N. Y.; Paul Schweikher, architect, Chicago; Edward D. Stone, architect, N. Y.; and Gardner Dailey, architect, San Francisco.

Architectural Forum acted as sponsor of the competition, while George B. Nelson, of Fortune Magazine, was professional advisor.

Roberts & Mander Corp'n. Appoints P. J. France

Roberts & Mander Corporation, Hatboro, Penna., has announced the appointment of Paul J. France as District Sales Representative for Western Pennsylvania. Mr. France will also handle sales in adjoining sections of West Virginia and Ohio.

Paul J. France

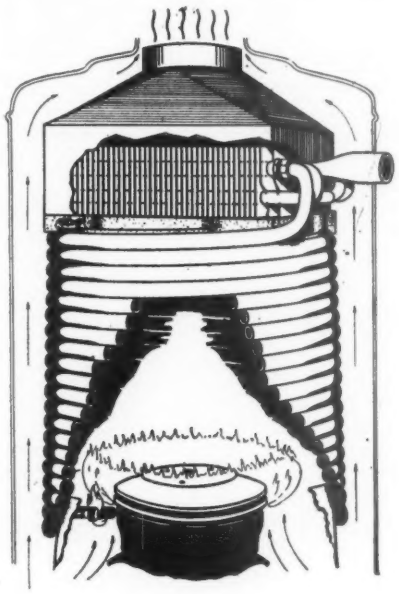
In making this announcement, R. S. Agee, Vice President, stated that extensive merchandising activities for "Quality" appliances have been planned for the Western Pennsylvania territory. Mr. France will direct the promotion and sale of appliances, and train utility company and appliance dealer salesmen. He will also handle sales for new home construction and apartment house modernization.

GPM
IRON HYDROXIDE
The mark of
unerring dependability
in purification
GAS PURIFYING MATERIALS CO., INC.
3-15 26th Ave.
Long Island City 2, New York

COMPLETE GAS PLANTS
INDUSTRIAL FURNACES
•
Automatic Water-Gas Controls
Hydraulically-Operated Valves
for Air, Gas, and Steam
•
The GAS MACHINERY CO.
CLEVELAND, OHIO

Instantaneous Water Heating for Commercial Uses

Designed for all commercial services where hot water requirements to meet abnormal quantity, intermittent peak loads, sterilizing heat or unusual problems are confronted, the Smithway-Burkay units are described here in brief.



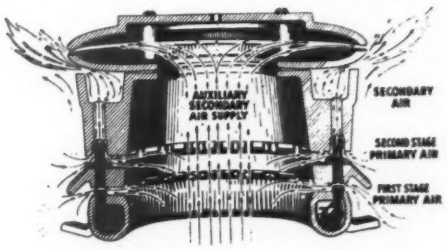
Cutaway view of heater shows relative size of the small burner and arrangement of coils. Heat exchanger is at the top.

The heater maintains 140 degree water in a tank from which it can be drawn as desired, but when sterilizing water is needed the heater also draws from the tank, boosting the 140 degree water to 180 degrees. It has a capacity of from 190,000 to 195,000 b.t.u.'s per hour, heating 125 gallons of water from 50 degrees to 180 degrees in an hour, or 3,000 gallons of 180 degree water a day.

A thermal efficiency within 4 per cent of theoretical maximum is claimed. An 11 per cent loss is essential for combustion and a flue loss of 12 per cent, while its total loss is only 15 per cent, or a radiation loss of 3 per cent.

Water enters the unit at the top, then flows downward through tubing coiled in such fashion that it becomes the wall of the combustion chamber and the flowing water absorbs heat which would otherwise radiate through the wall.

As an instantaneous heater it performs its essential function of furnishing hot water at the turn of the tap. As a recovery system it stores hot water in a tank and recovers the heat loss when water is drawn from it. As a booster it takes water already heated by a furnace or other means and boosts it to superheat as desired. As a booster-recovery system it provides two-temperature water. For very large capacity the heaters can be connected in batteries.



The burner is only eight inches in diameter, yet is A.G.A. rated at 190-000 b.t.u's. per hour for mixed or manufactured gas and 195,000 b.t.u's. per hour for natural gas

A patented thermostatic control increases or decreases the gas supply as the flow of water is varied. The burner provides two stages of primary air and an auxiliary supply of secondary air to insure combustion of gases that might otherwise be unburned. The burner selects the correct proportion of "gas-air" so that high thermal efficiency is maintained throughout varying rates of gas input.

A patented heat exchanger, in which multiple metal fins surround and support the tubing, exposes 30 square feet of heat transfer area to a total water content of only four pints. Heat transfer therefore is exceptionally rapid, resulting in low stack temperatures.

Recent installations include restaurants, schools, beauty parlors, an eleven family apartment house and a battery of seven heaters for a swimming pool.

Pipe Line Expansion Project in South and Mid-West

The Mississippi River Fuel Corporation, St. Louis, Missouri, has filed an application with the Federal Power Commission requesting authority to construct a number of additions to its natural gas transmission system which begins at Perryville, Louisiana, and continues through Arkansas and Missouri into Illinois. The new facilities would increase the natural gas sales capacity of the system by approximately 50,000 Mcf per day to a total of about 183,000 Mcf per day. The estimated cost of the proposed project is $11,574,000. The company desires to begin construction by September and expects to complete the project by the first of the year in time to meet peak requirements in January and February of 1947.

The facilities would consist largely of loop lines and the addition of 10,200 horsepower to existing compressor stations.

To meet increasing demands, the company plans to construct a series of partial loops in each section of its main line, beginning at Perryville, Louisiana, and extending to the vicinity of St. Louis. The looping operation will require an aggregate of about 265 miles of 22-inch pipe. In addition, it proposes to increase the capacity of its present compressor stations.

Mississippi River Fuel purchases natural gas in the Monroe, Louisiana, gas field and transports and sells such gas to utility distributing companies for resale for domestic, commercial and industrial purposes and also sells gas directly to industrial consumers. Its principal sales take place in Illinois and Mississippi, in the vicinity of Alton, East St. Louis and St. Louis.

Louisville Gas & Electric Co. Shows Gas Revenue Increase

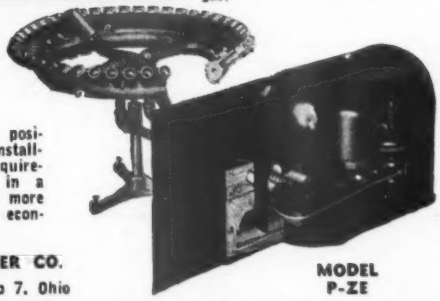
Financial Report of Louisville Gas and Electric Co. for 1945 shows a substantial increase in gas operating revenue for the year as compared with 1944, the increase amounting to $280,457 making total gas revenue for the year $5,074,274.

COLUMBIA CONVERSION GAS BURNERS

FOR WARM AIR FURNACES AND HOT WATER, STEAM AND VAPOR BOILERS

NU-TYPE ductless burner that performs perfectly with natural, manufactured or mixed gas.

Popular with scores of utilities and thousands of home owners. Simplifies problem of converting to gas Tamperproof controls, quiet operation, high efficiency, positive performance. Easily installed. Negligible service requirements. Each installation in a neighborhood sells many more because of its simplicity, economy and ease of control.



MODEL P-ZE

COLUMBIA BURNER CO.
729 Ewing St., Toledo 7, Ohio

CLEVELAND

"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS

Cleveland Gas Meter Co.
ESTABLISHED 1875
2009 Rockwell Ave., Cleveland 14, O. Phone CHerry 2351

Gild Breakfast at the Natural Gas Meeting, Hotel Gibson, Cincinnati, May 8th.

"Gild" Activities

A score of Supplers turned out for the Gild of Ancient Supplers early breakfast May 8th at the Natural Gas Convention, Hotel Gibson, Cincinnati. Clockwise around the table are: H. W. Cheeseman and F. L. Fairchild, Sprague Meter Co.; J. F. Donnelly, A. O. Smith Corp.; W. J. Foster, Geo. D. Roper Corp.; S. G. Krake, *American Gas Journal;* Clifford Johnstone, Pacific Coast Gas Association; W. V. Turner, *Gas Age;* J. K. Busch, Roper; F. C. Packer, Payne Furnace Co.; E. C. Sorby and D. S. Sharpe, Roper; John Van Norden, American Meter Co.; Alexander Forward, who describes himself as "unemployed"; G. A. Bowman, Robertshaw Thermostat Co.; H. W. Springborn, *Gas Age;* H. E. Howerton, Hardwick Stove Co.; H. O. Andrew and J. H. Moore, *Gas Age;* W. L. Plummer, Roper; and R. B. Hurt, Hardwick. Present, but not in the picture, was B. L. Landis, Roper. Warden Sharpe presided; Clerk Van Norden led the Supplers in repetition of the charge; Senior Warden Packer described the objectives of the Gild; and Alderman Sorby reviewed the Gild emblem and motto.

Presentation of a jeweled watch fob, replica of the Gild emblem, highlighted a dinner honoring C. Edwin Bartlett, Past Mayor II of the Gild of Ancient Supplers. Some 30 members gathered May 17 at the Meridian Club, Philadelphia, Pa., and letters and telegrams of congratulation were received from a score more.

Receiving the jeweled emblem from Mr. Mulcare, Mr. Bartlett expressed his sincere thanks and declared "this is not an organization, this is our gang."

Presiding was Warden W. Roberts Cameron, General Coal Co., Philadelphia. Speakers included Alderman E. Carl Sorby, Geo. D. Roper Corp., Rockford, Ill.; Alderman Joseph A. Messenger, Buell Engineering Co., New York City; Past Mayor I William S. Guitteau, American Meter Co., Fort Lauderdale, Fla.; Mayor Joe A. Mulcare, Mulcare Engineering Co., New York City; Keeper of the Treasure, Glenn H. Niles, consulting engineer, Ridgewood, N. J.; and Clerk John Van Norden, American Meter Co., New York City.

"The salesman has a definite part in this industry," declared Mr. Guitteau in reviewing the history of the Gild, born nine years ago at a Pennsylvania Gas Association convention. "Members must be men of integrity, gentlemen at heart, who can exchange confidences without fear of divulging business secrets."

In addition to those mentioned, the following were present: A. P. Brill, John L. Eigenbrot, William J. Foster, Carl A. Goodwin, James I. Gorton, W. Griffin Gribbel, William G. Hamilton, Jr., L. Minford Humrichouse, J. Albin Johnson, Wilson J. Kite, Jr., S. G. Krake, Harold Massey, E. W. Mears, Leslie B. Moxon, William H. Parish, Carl A. Schlegel, H. W. Springborn, J. Mortimer Traugott, Sol W. Weill, H. Leigh Whitelaw, Edward B. Wilson and Duncan A. Worrell.

Atmospheric Gas Burners

Domestic Gas Research Bulletin No. 37 entitled, "Primary Air Injection Characteristics of Atmospheric Gas Burners, Part II," has been issued by A. G. A.

In essence the data presented in this bulletin are supplemental to those covered in Research Bulletin No. 26 of the same title. New data are presented on the effect of individual variables in burner design on the atmospheric injection of primary air. Among the burner design factors quantitatively analyzed with respect to injection of primary air are size of throat, port size and depth, slope of injection tube and ratio of throat to total port area. The optimum values of these factors are likewise indicated.

The major factors enumerated above have been embodied into a mathematical equation whereby their effect together with the gas characteristics on primary air entrainment may be calculated. It is felt that this will be a most useful tool for burner design problems.

Copies of the bulletin may be obtained at $1.50 each by writing directly to the American Gas Association Testing Laboratories, 1032 East 62nd Street, Cleveland 14, Ohio.

Major Thos. J. Watt Returns to Sprague Meter Company

The Sprague Meter Company announces the return of Major Thomas J. Watt after five years of active duty with the Army Ground Forces. Major Watt entered on active duty as a Captain CAC with the Connecticut National Guard, September 16, 1940. His last assignment was with the Infantry, Fort Ord, California.

Thomas J. Watt

Major Watt joined the Sprague Meter Company in 1929, engaging in factory production until 1940. He will now join the Sales division as Eastern Sales Representative, Home Office, 35 South Avenue, Bridgeport, Conn.

American-Standard Expands Research

Theodore E. Mueller, President of the American Radiator & Standard Sanitary Corporation, has announced the appointment of John C. Reed of Louisville as Manager of Research and Product Development for the Corporation. Mr. Reed is a graduate of the School of Mines and Metallurgy of the Pennsylvania State College. He has been connected with the Company since 1929, having started in the Engineering Department at Louisville Works, Louisville, Kentucky, and has held successively important positions in their Engineering and Research Departments.

At the same time, Mr. Mueller also announced the appointment of Robert E. Daly of Pittsburgh as Director of Product Engineering. Mr. Daly received his engineering degree from Notre Dame in 1916. He joined the Company in 1917 in their Institute of Thermal Research, Buffalo, since which time he has held various positions in the Sales and Engineering Departments of the Company.

Both Mr. Reed and Mr. Daly were active in the extensive war production program of American-Standard, and their appointment will bring to the Company's Research and Product Development valuable experience gained in the production of materials for war.

New Accounting Method Developed by Remington Rand

Multi-Matic Accounting, an entirely new system of accounting and payroll preparation, has been developed by the Systems Division of Remington Rand, Inc. It is applicable to small and medium size businesses and to branch office accounting in large organizations. It has been thoroughly pre-tested by selected companies and has proved practical and economical. Users report savings of 40 per cent in cost and up to 66 per cent in time compared to conventional bookkeeping methods.

The system was conceived and invented by Mr. Rolf Hurup, who is widely known in European and American Accounting circles. Mr. Hurup is a member of the National Association of Cost Accountants and of the Scandinavian Engineering Society.

It was devised for the specific purposes of making more complete and useful financial and statistical reports available to managements of medium and small businesses; reducing the cost of the bookkeeping operations; and increasing the accuracy of reports prepared manually. The basic principle is the simultaneous posting of a number of financial or statistical reports by means of a single writing. The patented board permits the same entry to appear in a number of different columns on separate reports. For example, a single writing prepares pay checks, employees' earnings history records, and the payroll register, insuring that identical entries will be correctly distributed to the proper columns of the check stub or voucher, payroll register, and individual employee's ledger card.

It permits similar multi-purpose entries in general ledger accounting. Since transcription of figures is eliminated in preparing a series of reports, the risk of transcription errors does not exist. The triple check (number matching; color matching; and position matching) automatically made on each posting makes erroneous distributions virtually impossible. Should one occur, it is caught the same day, since totals cannot be made unless figures are in register in columns.

It provides a daily and period-to-date financial statement, with proved balances of totals and of each operating account, and yet it requires no skilled accounting help. These are the reasons a number of large organizations have indicated intense interest in using it in uniform branch office and dealer organization accounting control plans.

Information regarding details is available through any branch office of Remington Rand, Inc., Systems Division, or from the Systems Division, 315 Fourth Avenue, New York 10, New York.

National Radiator Company Promotes D. M. Ramsay

David M. Ramsay recently was appointed Manager of the Industrial Division of the National Radiator Company of Johnstown, Pennsylvania, according to an announcement by Robert S. Waters, President. The Industrial Division manufactures process equipment for the chemical and petroleum industries. Mr. Ramsay has been with National Radiator Company for five years, having been a field engineer in the Boston office, Assistant Manager of the Industrial Division, and Assistant to the Manager of the Heating Division in charge of Specialty sales.

Roberts-Gordon Appl. Corp'n. Appoints Warnecke Chf. Engr.

Robert I. Warnecke has been appointed chief engineer of the Roberts-Gordon Appliance Corporation, Buffalo, New York, according to an announcement by W. S. Gordon, Jr., President of the Corporation. Mr. Warnecke will be in charge of all development work on the present equipment that is being built and new product development.

Robt. I. Warnecke

Mr. Warnecke is at present Assistant Superintendent and Personnel Representative of the Manufacturing Department of the Brooklyn Union Gas Company. He has been associated with Brooklyn Union since 1932, and from 1935 to 1942 was head of the House Heating and Water Heating Service Division of the Distribution Department.

He is a licensed professional engineer, and a member of the American Gas Association.

Mr. Warnecke will make his headquarters in Buffalo, and will assume his new duties about the middle of June.

Fiber Glass Diaphragms

Askania Regulator Co., 1603 South Michigan Ave., Chicago 16, announces the development of a new highly sensitive fiber glass diaphragm for control and instrumentation.

It is stated that these diaphragms do not sag or stretch, are non-porous and impervious to gases and vapors, and also have high resistance to acids and alkalis. Long life is claimed exceeding that of goat leather.

Gas Detection and Analysis Instruments

The Davis Emergency Equipment Co., Inc., 45 Halleck Street, Newark 4, N. J., announces an extended line of gas detection and gas analysis instruments. These are the result of the recent granting of the exclusive license to manufacture and sell special thermal conductivity cells under W. O. Hebler Co. Pat. No. 2,269,850.

The new line of instruments will include safety equipment for the detection and analysis of combustible gas or vapor in air for the measure of gas or vapor air mixture from the characteristics of explosion. It will also detect and analyze any one gas, whether combined or net with other gases.

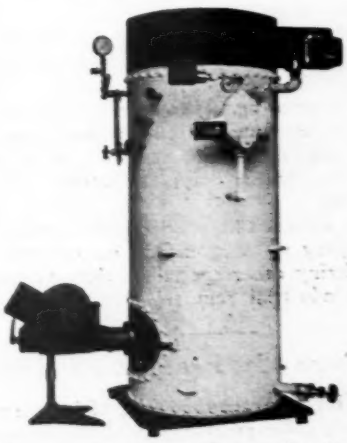
The detection and analysis of any one gas in a binary mixture, for gas purity or gas proportioning, will also be possible, as will similar detection and analysis of any one gas in a complex mixture with all gases varying. The analysis of flue gas and exhaust gas is also possible with the new instruments.

All of the new line of instruments are available with direct reading meters, or circular chart or strip chart recorders, or with recording and control equipment.

Bendix Appliances Appoints G. D. Payne To Sales Post

Gordon D. Payne has been appointed division sales manager for the Detroit area by W. F. Linville, general sales manager, Bendix Home Appliances, Inc., of South Bend, Ind. The territory includes Detroit, Cleveland, Grand Rapids, South Bend and Toledo, and is part of the region supervised by W. A. Becker. Mr. Payne succeeds Charles G. Mason.

LATTNER
GAS — OIL BOILER
3 HP to 35 HP.



Burns natural gas or regular furnace oils with equal efficiency using same burner.

P. M. Lattner Mfg. Company
Cedar Rapids, Iowa

Conversions & Surveys Inc.

A new company, Conversions and Surveys, Inc., has been organized to assist those gas utilities throughout the country which are contemplating a changeover from manufactured to natural or liquified petroleum gas. Principal offices of the new company are located at 90 Broad Street, New York City.

J. H. Warden.

John H. Warden, president and director, is well known in the utility industry, having spent 25 years in the business. Before coming to Conversions and Surveys, Inc., Mr. Warden was associated with Oklahoma Natural Gas Company and for many years has taken an active part in the activities of the American Gas Association and the Southern Gas Association.

The company is prepared to handle a complete changeover job, including preliminary planning and engineering, ordering materials, and recruiting, training and organizing conversion crews to do the actual changeover work on the customers' premises. Mr. Warden pointed out that this would relieve local companies of the necessity for building up special organizations for handling such work and relieve the executive personnel from the tremendous amount of planning and detail work involved in such conversions.

M. C. Adams, who has been engaged in conversion work for many years, has joined the organization and will be in charge of the actual changeover work. Frank M. Orelup, who has had more than 20 years of distribution and utilization engineering experience in the gas industry, is directing the technical activities of the new company.

Other officers and members of the organization are: R. E. Ritchie, vice president and director; R. W. Ducker, vice president and director; G. L. Baker, treasurer; K. R. Teele, assistant treasurer; D. W. Judy, secretary; W. C. MacInnes, director; P. J. Rempe, director; P. R. Taylor, director and H. W. Schell, director.

The company has already been engaged to handle conversion work for client companies having approximately 300,000 meters.

In addition to its conversion work, the company plans to expand its activities by rendering other special services to utility and industrial companies.

Helium—Its Properties and Uses

With abundant quantities of helium now available for private enterprises—as much as 10 million cubic feet per month—the peacetime uses of this unique lightweight, noninflammable gas may overshadow its great wartime performance.

Backed by the experience of more than a quarter of a century of production, the Bureau of Mines now can furnish an uninterrupted supply of helium for industrial and medical uses and still continue to meet demands of military and Government agencies.

The wartime expansion of the Bureau's production facilities at plants in the Southwest thus elevates helium from its 1915 place as a laboratory curiosity costing about $2,500 per cubic foot to its present position of abundance among the Nation's resources costing about one cent a cubic foot.

Hailed as a new industrial tool, helium in peacetime will continue to alleviate human suffering in the treatment of certain rspiratory ailments, assist in the expansion of newly-developed metallurgical processes, serve as a tracer in determining underground migrations in gas and oil reservoirs, minimize explosion dangers in the use of some anesthetics, and reduce, and when mixed with pure oxygen, reduce or eliminate the painful caisson disease, commonly called "the bends."

Complete with a bibliography of more than 900 articles on helium, the paper also lists 13 tables comparing the properties of helium with properties of other gases.

A copy of Information Circular 7334, "The Properties and Uses of Helium," by Henry P. Wheeler, Jr., may be obtained free from the Bureau of Mines, Department of the Interior, Washington 25, D. C.

Natural Gas and Petroleum Association of Canada Holds Annual Convention

Methods of solving the problems created for the natural gas industry in southwestern Ontario by increased demands and declining reserves formed the dominant theme of the papers and discussions at the 20th annual convention of the Natural Gas and Petroleum Association of Canada, held at Windsor on May 22 and 23.

The gathering marked the resumption of regular annual conventions after the interruptions resulting from the war years. Though the conventions were temporarily suspended much work was done by the association directors, which was reviewed by Vice-President S. B. Severson of Buffalo, who presided in the absence of Major E. Sweet, the president.

At the morning session on May 23, Geo. H. Smith, director of the Natural Gas Department of the American Gas Association, briefly reviewed the gas industry program of his organization. H. D. Valentine, sales promotion manager of the People's Gas, Light & Coke Co. of Chicago, gave an inspiring address on "The Paradox of Modernism." Two papers were read, one on "Underground Storage of Gas" by Gary Skeels, assistant to the vice-president of the Dominion Natural Gas Co., Buffalo, and the other on "Peak Load Auxiliary Gas" by C. George Segeler, engineer of utilization, American Gas Association. Both papers were followed by keen discussion.

The afternoon questionnaire, conducted by S. B. Severson, dealt with leakage problems at wells and in gathering lines, and the proper care of wells to secure the best production. A report was also presented by C. M. Sieger for the committee on standardization of appliances.

Officers elected for the year 1946-47 were:

President emeritus, C. E. Steele, Port Colborne; honorary president, Major E. Sweet, Brantford; president, S. A. Morse, Chatham; first vice-president, S. B. Severson, Buffalo; second vice-president, C. N. Glenny, Fort Erie; treasurer, J. A. Richie, Buffalo; secretary, Jos. McKee, Hamilton.

EARL V. KESINGER

The industry has suffered a great loss with the death of Earl V. Kesinger, Vice President of Natural Gas Pipeline Company of America, Chicago, Ill., on May 13.

For many years Mr. Kesinger was active on the technical committees of the American Gas Association. He was a member of the Technical and Research Committee of the Natural Gas Department and chairman of the Pipeline Subcommittee. He was instrumental in developing revisions of the American Petroleum Institute Line Pipe Specifications for gas line pipe.

In 1930 he was made Chief Engineer of the Continental Construction Corporation, which company was organized to design and construct the pipeline system which brings the natural gas from the Panhandle of Texas to Chicago and its environs. In 1942 Mr. Kesinger was elected Vice President of the Natural Gas Pipeline Company of America and Texoma Natural Gas Company and the Quadrangle Gas Company. Later that year he was elected to the board of directors of these companies.

CHARLES W. BRADLEY

Charles W. Bradley, 72, former vice-president of the Public Service Company of Northern Illinois, who retired in 1940 after nearly 35 years of service, died of a heart attack at his home on May 5.

Prior to 1905, when Mr. Bradley started to work for the Northwestern Gas Light and Coke Company, he worked for the Peoples Gas Light and Coke Company. When the Northwestern Gas Light and Coke Company became part of the Public Service Company, Mr. Bradley was appointed Gas Engineer. Later he was named Assistant to the President and in 1924 he was elected vice-president.

Mr. Bradley, son of the late William H. Bradley, who was chief engineer of the New York Consolidated Gas Company, is credited with the development and modernization of much of the gas service in the Chicago area.

WILLIAM T. BENTLEY

Wm. T. Bentley, President of Titan Valve & Manufacturing Co., died of a heart attack May 24th in his home in Cleveland, Ohio. Born 38 years ago in Cedar Rapids, Iowa, he has resided in Cleveland since 1925. He organized The Titan Company in 1932.

He was a member of the National Association of Manufacturers, and Chairman of the thermostatic control and accessories division of the Gas Appliance Manufacturers Association.

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Bride's Cooking School

(Continued from page 21)

types of advertising and promotion. Display copy was carried in the newspapers of Los Angeles and the eight other communities in which the classes were presented. Floor card displays were maintained in the main and branch offices of the gas company. The classes also were called to the attention of women through contacts established by company representatives with community organizations and women's clubs.

One girl in the Home Service Department was assigned the daily task of scanning the marriage license column in the newspapers of the nine cities. A small printed folder then was mailed to every woman whose name appeared among the marriage licenses. The folder was 6x3¼ inch two color job. The purpose of the classes and a brief outline of the five lessons appeared on the inside.

Window Setups Attracts Attention

In Los Angeles, effective publicity for the cooking classes was created by a character to whom became attached the name "Gas House Gertie." A window dummy, "Gertie" formed the central figure in a display set up in the show window of the Southern California Gas Co.'s headquarters building.

The incongruity of "Gertie," standing in front of a gas stove while garbed in a white satin wedding gown, bridal veil and apron attracted the attention which the originators of that deliberate anomaly—the gas company display staff—had hoped for. A 24x36 inch framed cardboard sign explained what "Gertie" was doing there. The sign read, "BRIDES' COOKING CLASSES, Given by Home Service Department, Southern California Gas Co. . . . Get Schedule Here."

ENGINEERS WANTED

Wanted—Gas Engineers with experience on design of Carburetted Water Gas Plants and Equipment. United Engineers & Constructors Inc., 1401 Arch Street, Philadelphia 5, Pa.

WANTED

DOMESTIC GAS METERS

IRON, Any Type

PAVILION NATURAL GAS CO.

Geneseo, N. Y.

Rate Revisions

(Continued from page 36)

The extent of the rate decrease allowable under the plan would appear to be limited only by the increase in earnings shown. Upward limit of the rate increase, should such occur, has been set at the point where the increases would cancel out present discount rates. At that point the adjustment plan would be considered terminated, the Commission's proposal declared.

In submitting the proposal, the State Railroad Commission declared its purpose is to use the plan as a stop-gap during the immediate future, rather than to establish a new system of firm rates at present.

B. W. Rogers to Represent Hammond

The appointment of B. W. Rogers, Akron, Ohio, as their Akron District representative, has been announced by the Hammond Iron Works, Warren, Pa., designers, fabricators, and erectors of steel storage tanks for liquid and dry storage and steel and alloy plate work.

B. W. Rogers and J. G. Prentiss will represent the full line of Hammond services including designing, fabrication and erection.

Natural Gas Meeting

(Continued from page 18)

Bank, Vice Chairman; E. E. Roth, Columbia Gas & Electric Corp.; Charles C. Hoffman, Cities Service Gas Co.; Perry Olcott, Humble Oil & Refining Co.; Robert Garrett, Arkansas Natural Gas Co.; William T. Nightingale, Mountain Fuel Supply Co.; Roy M. Bauer, Southern California Gas Co.; Frederick S. Lott, Assistant Chief, Petroleum Economics Division, U. S. Bureau of Mines (special member for coordination with Bureau of Mines production statistics) and Walter E. Caine, Chief Statistician, American Gas Association, Secretary.

The Gas Reserves Committee is attempting to cooperate with and to correlate its work with that of The Oil Reserves Committee of the American Petroleum Institute. The latter committee has been functioning since 1935, has issued reports annually since 1937, and its published estimates have become bench marks of the petroleum industry's economics.

In the borderline classification between natural gas and crude oil, there are important resources of natural gasoline, condensate, cycling plant products, and liquefied petroleum gases. The Committee is working closely with the A.P.I. committee in the estimation of the reserves of all of these intermediate liquid hydrocarbons which both committees have agreed to group under the collective classification of "natural gas liquids."

LP Gas and Its Utilization by the Natural Gas Industry was discussed in a paper by Francis E. Drake, Pacific Gas Corp., New York. It dealt largely with the use of LP gas for peak load purposes and to take care of industrial users of gas at times when the natural gas supply was not sufficient to meet demands during any period.

The Transmission Committee held two open meetings, both presided over by H. J. Carson, chairman. Papers on the following subjects were presented:

Gas Hydrate Composition and Equilibrium Data: W. M. Deaton, Helium Engineer, United States Bureau of Mines, Amarillo, Texas.

Solid Adsorption - Type Natural Gas Dehydration Plants: Carl V. Spangler, J. F. Pritchard and Company, Pittsburgh, Pennsylvania.

Field Compressing Stations: C. S. Worley, Consolidated Gas Utilities Corporation, Oklahoma City.

Radio Systems for Pipe Lines: Warren T. Bulla, Superintendent, Communications and Dispatching, Natural Gas Pipeline Company of America, Chicago, Illinois.

Colored Film of the Construction of the Canol Line.

The Production and Storage Committee held an open meeting on Tuesday presided over by L. T. Potter, chairman. Papers on the following subjects were presented:

Windowed Cell for Observing Hydrocarbon Phases Under Variabe Pressures: Kenneth Eilerts, Physical Chemist, United States Bureau of Mines, Bartlesville, Oklahoma.

Corrosion of Equipment in High Pressure Gas Wells: T. S. Bacon, Research Engineer, Lone Star Gas Company, Dallas.

Review of Certain Storage Projects

Goleta Storage Project: Marion L. Fort, Superintendent of Operations, Pacific Lighting Corporation, Los Angeles.

Storage in the Appalachian Area: J. H. Isherwood, Vice President and General Manager, North Penn Gas Company, Port Allegany, Pa.

The Accounting Committee held an open round-table discussion — Leith V. Watkins, chairman, presided, and the following subjects were discussed:

Depletion Accounting.

Tax Problems Peculiar to the Natural Gas Industry.

Accounting for, and Tax Treatment of, Geological, Geophysical and Exploratory Drilling Costs.

Various Methods of Treatment in the Accounts of the Companies of Tax Reductions Resulting from Deductions of Intangible Drilling Costs.

Job Training Programs for Natural Gas Company Accounting Personnel.

Job Evaluation Programs for Natural Gas Companies.

Merits of Centralized vs. Decentralized Billing of Consumers.

Uniform Classification of Accounts for Natural Gas Companies.

The Advisory Council and Executive Board Conference of the American Gas Association was held on Monday, May 6th.

L. to R.: Clifford Johnstone, managing director, Pacific Coast Gas Association, San Francisco; H. L. Farrar, Coast Counties Gas & Electric Co., San Francisco; J. S. Moulten, Pacific Gas & Electric Co., San Francisco; E. T. Parks, Public Service Co. of Colorado.

Electric Tools. Catalog 464 issued by Syntron Company, Homer City, Pa., gives 40 pages of description and illustrations covering their complete line of electric tools for plant maintenance and construction. It includes portable hammers, drills, screwdrivers, nut runners, grinders, sanders and semi-portable hack saws.

Convenient pocket size, 4½x7. Gives price list of each item. Copy on request.

L P Gases and Equipment. Gasair Propane, Butane and Pentane Apparatus is comprehensively described and illustrated in Bulletin 393 issued by Pacific Gas Corporation, 630 Fifth Ave., New York 20, N. Y., and their associate, California-Maine Corporation, 582 Market Street, San Francisco 4, Calif.

Principles of operation are completely covered in text and operating diagram along with installation views.

A companion bulletin lists installations made in 29 States from coast to coast.

Liquid Level Controls. Bulletin 201P. issued by Photoswitch Inc., 77 Broadway, Cambridge 42, Mass., describes their series 10 floatless liquid level control for all electrically conductive liquids including chemical compounds. Contact with the liquid is made by stainless steel probe rods suspended in the tank, make and break contact being transmitted to a relay.

Electronic Recorder—Controller: A 16-page Bulletin No. 232, "Bailey Pyrotron Electronic Potientiometer Pyrometer" describes and illustrates various indicating, recording and controlling combinations, gives performance data, and outlines principle of operation. Copy sent on request by Bailey Meter Company, 1040 Ivanhoe Road, Cleveland 10, Ohio.

Winners of the *Magic Chef* Design Competition

THESE WINNERS of the Magic Chef design competition have contributed greatly to Magic Chef's continuous search for the ultimate in gas range design and convenience:

GRAND PRIZE—$5,000

Product Design Associates, New York, N. Y. Front row, left to right: Miss Taina Waisman, Miss Marie DiBari (independent designer), Miss Read Weber. Back row, left to right: Mr. Sidney L. Katz, Mr. Victor Elmaleh, Mr. Jos. Blumenkranz. Product Design Associates also won 3rd prize $2000, and 6th prize $1000.

FIFTH PRIZE—$1000

Lt. Commander W. R. Holt, U. S. N. R.

Ten additional prizes of $500 each awarded to:

Mr. Alfred C. Hoven, E. Grand Rapids, Michigan; The Architects Collaborative, Cambridge, Massachusetts; Mr. Wm. E. Lunt, Jr., Philadelphia, Pennsylvania; Mr. Stewart M. Herman, Seattle, Washington (2 awards); Mr. Walker Johnson, Buffalo, New York; Mr. A. L. Malott, Cleveland, Ohio; Miss Helen G. Dunn, Milwaukee, Wisconsin; Mr. Robert Dean Pfister, Rocky River, Ohio; Mr. Gordon M. Nunes, Los Angeles, California

SECOND PRIZE—$3000

Mr. Roger G. Spross, New York, New York
Lexington N.Y.C.

FOURTH PRIZE—$1000

Mr. Bert L. Bassuk, Brooklyn, New York
Mr. Martin Glaberson, New York, N. Y.

The American Stove Company wishes to thank the many contestants who submitted entries for this design competition. Only the outstanding competence of the judges made it possible to select the winners from the hundreds of splendid entries we received.

Magic Chef

RED WHEEL GAS RANGES AND HEAVY DUTY GAS COOKING EQUIPMENT

AMERICAN STOVE COMPANY
4301 Perkins Ave. • Cleveland, Ohio
NEW YORK • ATLANTA • PHILADELPHIA • CHICAGO
CLEVELAND • ST. LOUIS • LOS ANGELES

THE GAS RANGE WITH THE FAMOUS RED WHEEL

Another Step Forward

in the Modernization of
SPRAGUE GAS METERS
Now appearing
in its Streamline Case

THE SPRAGUE METER CO. BRIDGEPORT, CONN.

DAVENPORT, IOWA • LOS ANGELES, CALIF. • HOUSTON, TEXAS • SAN FRANCISCO, CALIF.